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=> file home
FILE 'HOME' ENTERED AT 21:03:58 ON 13 JUL 1998

=> display history full l1-

     (FILE 'HOME' ENTERED AT 20:16:02 ON 13 JUL 1998)

     FILE 'LCA' ENTERED AT 20:16:26 ON 13 JUL 1998
L1         2189 SEA (FIBER? OR FIBR? OR FILAMENT? OR THREAD? OR STRAND?
                OR RIBBON? OR FILIFORM?)/BI,AB
L2          271 SEA WIRE# OR WIRING# OR CABLE# OR CABLING#

     FILE 'REGISTRY' ENTERED AT 20:18:32 ON 13 JUL 1998
L3          120 SEA AG/MF
                E SILVER/CN
L4            1 SEA SILVER/CN

     FILE 'HCA, WPIDS, JAPIO' ENTERED AT 20:22:57 ON 13 JUL 1998
L5         2703 SEA (SUPERCOND? OR SUPER(W)(COND# OR CONDUCT?))(2A)(MATRI
                X? OR MATRICE? OR LATTIC? OR SUPERLATTIC?)
L6          246 SEA (SUPERCOND? OR SUPER(W)(COND# OR CONDUCT?))(2A)(MATRI
                X? OR MATRICE? OR LATTIC? OR SUPERLATTIC?)
L7           60 SEA (SUPERCOND? OR SUPER(W)(COND# OR CONDUCT?))(2A)(MATRI
                X? OR MATRICE? OR LATTIC? OR SUPERLATTIC?)
     TOTAL FOR ALL FILES
L8         3009 SEA (SUPERCOND? OR SUPER(W)(COND# OR CONDUCT?))(2A)(MATRI
                X? OR MATRICE? OR LATTIC? OR SUPERLATTIC?)
L9        96153 SEA L4 OR (SILVER# OR AG)(A)(METAL#### OR ELEMENTAL? OR
                ATOMIC? OR FREE# OR UNBOUND? OR NONBOND? OR NON(W)BOND?)
L10        1900 SEA L4 OR (SILVER# OR AG)(A)(METAL#### OR ELEMENTAL? OR
                ATOMIC? OR FREE# OR UNBOUND? OR NONBOND? OR NON(W)BOND?)
L11         528 SEA L4 OR (SILVER# OR AG)(A)(METAL#### OR ELEMENTAL? OR
                ATOMIC? OR FREE# OR UNBOUND? OR NONBOND? OR NON(W)BOND?)
     TOTAL FOR ALL FILES
L12       98581 SEA L4 OR (SILVER# OR AG)(A)(METAL#### OR ELEMENTAL? OR
                ATOMIC? OR FREE# OR UNBOUND? OR NONBOND? OR NON(W)
                BOND?)
L13         250 SEA L9 (2A)(DOPE# OR DOPING# OR DOPANT? OR IMMIX? OR
                COMMIX? OR ADMIX? OR INTERMIX? OR AMALGAM? OR INTERSPER?
                OR IMPREGNAT? OR INTERSPAT? OR INTERSTITIAL?)
L14          26 SEA L10(2A)(DOPE# OR DOPING# OR DOPANT? OR IMMIX? OR
                COMMIX? OR ADMIX? OR INTERMIX? OR AMALGAM? OR INTERSPER?
                OR IMPREGNAT? OR INTERSPAT? OR INTERSTITIAL?)
L15           7 SEA L11(2A)(DOPE# OR DOPING# OR DOPANT? OR IMMIX? OR
                COMMIX? OR ADMIX? OR INTERMIX? OR AMALGAM? OR INTERSPER?
                OR IMPREGNAT? OR INTERSPAT? OR INTERSTITIAL?)
     TOTAL FOR ALL FILES
L16         283 SEA L12(2A)(DOPE# OR DOPING# OR DOPANT? OR IMMIX? OR
                COMMIX? OR ADMIX? OR INTERMIX? OR AMALGAM? OR INTERSPER?
                OR IMPREGNAT? OR INTERSPAT? OR INTERSTITIAL?)
L17        2482 SEA (MELT? OR MOLTEN? OR FUSE# OR FUSING# OR FUSION?)(2A)
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                (L4 OR SILVER# OR AG)
L18         611 SEA (MELT? OR MOLTEN? OR FUSE# OR FUSING# OR FUSION?)(2A)
                (L4 OR SILVER# OR AG)
L19         344 SEA (MELT? OR MOLTEN? OR FUSE# OR FUSING# OR FUSION?)(2A)
                (L4 OR SILVER# OR AG)
     TOTAL FOR ALL FILES
L20        3437 SEA (MELT? OR MOLTEN? OR FUSE# OR FUSING# OR FUSION?)(2A)
                (L4 OR SILVER# OR AG)
L21         166 SEA (CRACK? OR FURROW? OR FRACTUR? OR CREVIC? OR CLEFT?
                OR CHINK? OR FISSUR? OR SCISSUR? OR RIVE OR RIVES OR
                RIFT?)(2A)(SUPERCOND? OR SUPER(W)(COND# OR CONDUCT?))
L22          53 SEA (CRACK? OR FURROW? OR FRACTUR? OR CREVIC? OR CLEFT?
                OR CHINK? OR FISSUR? OR SCISSUR? OR RIVE OR RIVES OR
                RIFT?)(2A)(SUPERCOND? OR SUPER(W)(COND# OR CONDUCT?))
L23          23 SEA (CRACK? OR FURROW? OR FRACTUR? OR CREVIC? OR CLEFT?
                OR CHINK? OR FISSUR? OR SCISSUR? OR RIVE OR RIVES OR
                RIFT?)(2A)(SUPERCOND? OR SUPER(W)(COND# OR CONDUCT?))
     TOTAL FOR ALL FILES
L24         242 SEA (CRACK? OR FURROW? OR FRACTUR? OR CREVIC? OR CLEFT?
                OR CHINK? OR FISSUR? OR SCISSUR? OR RIVE OR RIVES OR
                RIFT?)(2A)(SUPERCOND? OR SUPER(W)(COND# OR CONDUCT?))
L25           2 SEA L17 AND L21
L26           1 SEA L18 AND L22
L27           1 SEA L19 AND L23
     TOTAL FOR ALL FILES
L28           4 SEA L20 AND L24
L29           0 SEA L5 AND L13
L30           0 SEA L6 AND L14
L31           0 SEA L7 AND L15
     TOTAL FOR ALL FILES
L32           0 SEA L8 AND L16
L33         296 SEA (L1 OR L2) AND L5
L34         123 SEA (L1 OR L2) AND L6
L35          34 SEA (L1 OR L2) AND L7
     TOTAL FOR ALL FILES
L36         453 SEA (L1 OR L2) AND L8
L37          14 SEA L33 AND L9
L38           0 SEA L34 AND L10
L39           0 SEA L35 AND L11
     TOTAL FOR ALL FILES
L40          14 SEA L36 AND L12
L41      124413 SEA SUPERCOND? OR SUPER(W)(COND# OR CONDUCT?)
L42       26535 SEA SUPERCOND? OR SUPER(W)(COND# OR CONDUCT?)
L43       28211 SEA SUPERCOND? OR SUPER(W)(COND# OR CONDUCT?)
     TOTAL FOR ALL FILES
L44      179159 SEA SUPERCOND? OR SUPER(W)(COND# OR CONDUCT?)
L45          59 SEA L41 AND L13
L46           0 SEA L42 AND L14
L47           0 SEA L43 AND L15
     TOTAL FOR ALL FILES
L48          59 SEA L44 AND L16
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L49             1 SEA L45 AND (L1 OR L2)
L50             0 SEA L45 AND (L1 OR L2)
L51             0 SEA L45 AND (L1 OR L2)
     TOTAL FOR ALL FILES
L52             1 SEA L45 AND (L1 OR L2)
L53        268977 SEA MATRIX? OR MATRICE?
L54         92889 SEA MATRIX? OR MATRICE?
L55         42935 SEA MATRIX? OR MATRICE?
     TOTAL FOR ALL FILES
L56        404801 SEA MATRIX? OR MATRICE?
L*** DEL 203840 FILE HCA
L*** DEL  18605 FILE WPIDS
L*** DEL  13110 FILE JAPIO
     TOTAL FOR ALL FILES
L*** DEL 235555 S LATTIC?
L57        220956 SEA LATTIC? OR SUPERLATTIC?
L58         19599 SEA LATTIC? OR SUPERLATTIC?
L59         14193 SEA LATTIC? OR SUPERLATTIC?
     TOTAL FOR ALL FILES
L60        254748 SEA LATTIC? OR SUPERLATTIC?
L61             6 SEA L45 AND (L53 OR L57)
L62             0 SEA L46 AND (L54 OR L58)
L63             0 SEA L47 AND (L55 OR L59)
     TOTAL FOR ALL FILES
L64             6 SEA L48 AND (L56 OR L60)
L65            54 SEA L5 AND L9
L66             1 SEA L6 AND L10
L67             0 SEA L7 AND L11
     TOTAL FOR ALL FILES
L68            55 SEA L8 AND L12
L69             0 SEA L65 AND L45
L70             0 SEA L66 AND L46
L71             0 SEA L67 AND L47
     TOTAL FOR ALL FILES
L72             0 SEA L68 AND L48
L73            14 SEA L65 AND (L1 OR L2)
L74             0 SEA L66 AND (L1 OR L2)
L75             0 SEA L67 AND (L1 OR L2)
     TOTAL FOR ALL FILES
L76            14 SEA L68 AND (L1 OR L2)
L77             0 SEA L65 AND L17
L78             0 SEA L66 AND L18
L79             0 SEA L67 AND L19
     TOTAL FOR ALL FILES
L80             0 SEA L68 AND L20
L81             2 SEA L65 AND L21
L82             0 SEA L66 AND L22
L83             0 SEA L67 AND L23
     TOTAL FOR ALL FILES
L84             2 SEA L68 AND L24
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FILE 'HCA' ENTERED AT 21:01:52 ON 13 JUL 1998
L85 4 SEA L25 OR L81
L86 9 SEA (L49 OR L61 OR L81) NOT L25
L87 13 SEA (L37 OR L73) NOT (L25 OR L86)

FILE 'WPIDS' ENTERED AT 21:03:22 ON 13 JUL 1998
L88 2 SEA L26 OR L66

FILE 'HOME' ENTERED AT 21:03:58 ON 13 JUL 1998

FILE HOME

FILE LCA
LCA IS A STATIC LEARNING FILE

THIS FILE CONTAINS CAS REGISTRY NUMBERS FOR EASY AND ACCURATE
SUBSTANCE IDENTIFICATION.

This file contains CAS Registry Numbers for easy and accurate
substance identification.

FILE REGISTRY
STRUCTURE FILE UPDATES: 10 JUL 98 HIGHEST RN 208329-94-6
DICTIONARY FILE UPDATES: 12 JUL 98 HIGHEST RN 208329-94-6

TSCA INFORMATION NOW CURRENT THROUGH JANUARY 14, 1998

Please note that search-term pricing does apply when
conducting SmartSELECT searches.

Stereochemical name changes have been adopted and appear in CN's
beginning 6/29/30. See the online news message for details.

FILE HCA

FILE COVERS 1967 - 7 Jul 1998 (980707/ED) VOL 129 ISS 2

This file contains CAS Registry Numbers for easy and accurate
substance identification.

FILE WPIDS
FILE LAST UPDATED: 09 JUL 1998 <19980709/UP>
>>>UPDATE WEEKS:
MOST RECENT DERWENT WEEK 199827 <199827/DW>
DERWENT WEEK FOR CHEMICAL CODING: 199822
DERWENT WEEK FOR POLYMER INDEXING: 199824

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DERWENT WORLD PATENTS INDEX SUBSCRIBER FILE, COVERS 1963 TO DATE
>>> D COST AND SET NOTICE DO NOT REFLECT SUBSCRIBER DISCOUNTS -
                                 SEE HELP COST FOR DETAILS <<<
>>> MEXICO NOW COVERED  - SEE NEWS <<<

FILE JAPIO
FILE LAST UPDATED: 29 JUN 1998     <19980629/UP>
FILE COVERS 1976 TO DATE.

=> file japio
FILE 'JAPIO' ENTERED AT 21:05:05 ON 13 JUL 1998
COPYRIGHT (C) 1998 Japanese Patent Office (JPO) and Japan Patent
     Information Organization (Japio)

FILE LAST UPDATED: 29 JUN 1998     <19980629/UP>
FILE COVERS 1976 TO DATE.

=> d 127 1 ibib abs ct

L27  ANSWER 1 OF 1  JAPIO  COPYRIGHT 1998 JPO and Japio
ACCESSION NUMBER:         93-229820    JAPIO
TITLE:                    PRODUCTION OF OXIDE SUPERCONDUCTOR
INVENTOR:                 KOYAMA HISAJI; MURAKAMI MASAHITO; KOSHIZUKA
                          NAOKI; TANAKA SHOJI
PATENT ASSIGNEE(S):       KOKUSAI CHODENDO SANGYO GIJUTSU KENKYU CENTER,
                          JP   (CO)
                          SHIKOKU ELECTRIC POWER CO INC,  JP   (CO
                          351065)
                          NIPPON STEEL CORP,  JP   (CO  000665)
PATENT INFORMATION:

     PATENT NO    KIND   DATE        ERA     MAIN IPC
     ------------------------------------------------------
     JP 05229820  A      19930907    Heisei  (5) C01G001-00

APPLICATION INFORMATION
     STN FORMAT:          JP 91-49778          19910314
     ORIGINAL:            JP03049778           Heisei
SOURCE:                   PATENT ABSTRACTS OF JAPAN, Unexamined
                          Applications, Section: C, Sect. No. 1142, Vol.
                          17, No. 685, P. 148 (19931215)
AN   93-229820   JAPIO
AB   PURPOSE: To prevent the generation of strain in an oxide
     superconductor by placing a formed raw material powder for oxide
     superconductor on Ag or Ag2O, heating to a temperature above the
   melting point of Ag and heat-treating the formed
     raw material powder in a state floating on the molten
   Ag.
     CONSTITUTION: Raw materials for an REBaCuO-type oxide superconductor
     such as RE2O3 (rare earth metal oxide such as Y2O3), BaCO3 and CuO,
     etc., are mixed at prescribed compositional ratios and the mixture
```

is calcined. The calcination product is melted by heating at a specific temperature, cooled, crushed and formed to a prescribed form. A receiving pan 1 made of a metal infusible at the Ag-treating temperature (e.g. Ni) is placed in a furnace, an Ag or Ag2O plate 2 is placed on the receiving pan 1 and the formed powder 3 is placed on the plate, floated on **molten Ag** 4 and heat-treated at 1000-1200.degree.C (above the **melting** temperature of **Ag**). The heat-treated product is slowly cooled and solidified to obtain the objective large-sized formed oxide **superconductor** free from **crack** while suppressing the generation of deformation and strain.

CT R006 COMMON - Superconductivity

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=> file wpids
FILE 'WPIDS' ENTERED AT 21:05:56 ON 13 JUL 1998
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FILE LAST UPDATED: 09 JUL 1998                    <19980709/UP>
>>>UPDATE WEEKS:
MOST RECENT DERWENT WEEK             199827   <199827/DW>
DERWENT WEEK FOR CHEMICAL CODING:    199822
DERWENT WEEK FOR POLYMER INDEXING:   199824
DERWENT WORLD PATENTS INDEX SUBSCRIBER FILE, COVERS 1963 TO DATE
>>> D COST AND SET NOTICE DO NOT REFLECT SUBSCRIBER DISCOUNTS -
                                   SEE HELP COST FOR DETAILS <<<
>>> MEXICO NOW COVERED  - SEE NEWS <<<

=> d l88 1-2 ibib abs
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L88 ANSWER 1 OF 2 WPIDS COPYRIGHT 1998 DERWENT INFORMATION LTD

ACCESSION NUMBER: 92-349098 [42] WPIDS
DOC. NO. NON-CPI: N92-266376
DOC. NO. CPI: C92-154956
TITLE: Method of producing an oxide super conductor - providing a bulky (10 cm or more in dia.) oxide **superconductor** free from **cracks** and useful as material for magnetic shields, ring magnets etc..
DERWENT CLASS: L03 U14
INVENTOR(S): KOSHIZUKA, N; MURAKAMI, M; OYAMA, T; TANAKA, S
PATENT ASSIGNEE(S): (ITSU-N) INT SUPERCONDUCTIVITY TECHNOLOGY CENT; (YAWA) NIPPON STEEL CORP; (SHIK-N) SHIKOKU ELECTRIC POWER CO INC; (SHIK-N) SHIKOKU DENRYOKU KK; (KOKU-N) ZH KOKUSAI CHODENDO SANGYO GIJUTSU; (SHIN-N) SHINKOKU ELECTRIC POWER CO INC
COUNTRY COUNT: 5
PATENT INFORMATION:

PATENT NO	KIND	DATE	WEEK	LA	PG
WO 9216471	A1	921001	(9242)*	JA	15

EP 530370	A1	930310	(9310)	EN	7
JP 05229820	A	930907	(9340)		7
EP 530370	A4	931124	(9528)		
US 5459124	A	951017	(9547)		5
EP 530370	B1	960918	(9642)	EN	7
R: DE FR GB					
DE 69213871	E	961024	(9648)		

APPLICATION DETAILS:

PATENT NO	KIND		APPLICATION	DATE
WO 9216471	A1		WO 92-JP315	920316
EP 530370	A1		EP 92-906688	920316
			WO 92-JP315	920316
JP 05229820	A		JP 91-49778	910314
EP 530370	A4		EP 92-906688	
US 5459124	A	Cont of	US 92-946458	921113
			US 93-144947	931029
EP 530370	B1		EP 92-906688	920316
			WO 92-JP315	920316
DE 69213871	E		DE 92-613871	920316
			EP 92-906688	920316
			WO 92-JP315	920316

FILING DETAILS:

PATENT NO	KIND		PATENT NO
EP 530370	A1	Based on	WO 9216471
EP 530370	B1	Based on	WO 9216471
DE 69213871	E	Based on	EP 530370
		Based on	WO 9216471

PRIORITY APPLN. INFO: JP 91-49778 910314
AN 92-349098 [42] WPIDS
AB WO 9216471 A UPAB: 931115

A method of producing oxide superconductor comprises (1) putting a power V material, to be moulded into an oxide superconductor, on Ag or Ag2O in a pan which has a higher mp than Ag. (2) Heating the pan and its contents at a temp. higher than the m.p.t of Ag (and lower than that of the pan). (3) Bringing the material to a half molten state while it is floating in **molten Ag.** (4)
Cooling the pan and taking out the material from the re- solidified Ag.

Pref. the oxide superconductor is a complex oxide containing (RE), one or more of the elements Y, Sm, Eu, Gd, Ho, Er, Tm, Tb, and Lu, and Ba and Cu. The powdery materia to be moulded into an oxide superconductor is pref. obtd. by heating a mixt. of RE2, BaCO3 and CuO at 1200 deg. C (pref. 1050-1200 deg. C), cooling it to obtain a solidified body, and pulverising it. In step (1) a tube made of Ag

or Ag2O can be packed with the material.

USE/ADVANTAGE - Allows a bulky (10 cm in dia.) oxide superconductor to be obtd.. The superconductor is free of cracks and has a high critical current density. It is useful as material for bulky magnetic shields, big ring magnets, etc..

1/3

Dwg.1/3

ABEQ JP05229820 A UPAB: 931129

A method of producing oxide superconductor comprises (1) putting a power V material, to be moulded into an oxide superconductor, on Ag or Ag2O in a pan which has a higher m.pt. than Ag. (2) Heating the pan and its contents at a temp. higher than the m.pt. of Ag (and lower than that of the pan). (3) Bringing the material to a half molten state while it is floating in **molten Ag.**

(4) Cooling the pan and taking out the material from the re-solidified Ag.

Pref. the oxide superconductor is a complex oxide containing (RE), one or more of the elements Y, Sm, Eu, Gd, Ho, Er, Tm, Tb, and Lu, and Ba and Cu. The powdery material to be moulded into an oxide superconductor is pref. obtd. by heating a mixt. of RE2, BaCO3 and CuO at 1200 deg. C (pref. 1050-1200 deg. C), cooling it to obtain a solidified body, and pulverising it. In step. (1) a tube made of Ag or Ag2O can be packed with the material.

USE/ADVANTAGE - Allows a bulky (10 cm in dia.) oxide superconductor to be obtd. The superconductor is free of cracks and has a high critical current density. It is useful as material for bulky magnetic shields, big ring magnets, etc.

ABEQ US 5459124 A UPAB: 951128

Oxide semiconductor is mfd. by forming a body (3) from heat treated mixed powders, in the form of a material which forms RE-Ba-CuO-based superconductor, and placing the body on a plate (2) of Ag or Ag oxide within a pan (1) which does not melt at the m.pt. of Ag, e.g. of Al2O3, for heating to 1050-1200 deg.C to **melt** the **Ag** and to bring the body to a semi-molten state with the formed body floating on the **molten Ag**. The pan is cooled and the body is removed from the resolidified Ag.

ADVANTAGE - Large oxide superconductor can be produced without cracking.

Dwg.1/3

ABEQ EP 530370 B UPAB: 961021

A process for producing an RE-Ba-CuO based superconductor, comprising putting a body formed from heat treated mixed powders which form an RE-Ba-CuO-based superconductor, on silver or silver oxide within a pan which does not melt at the **melting** point of **silver**, heating the pan to a temperature of 1050-1200 degrees C to **melt** the **silver** to bring the formed body to a semi-molten state with the formed body floating on the **molten silver**, cooling the pan and removing the formed body from the re-solidified silver.

Dwg.1/3

L88 ANSWER 2 OF 2 WPIDS

ACCESSION NUMBER: 89-017284 [03] WPIDS
CROSS REFERENCE: 88-280154 [40]
DOC. NO. NON-CPI: N89-013320
DOC. NO. CPI: C89-007789
TITLE: Ceramic superconductor with silver in intergranular spaces - has high critical current and improved mechanical strength.
DERWENT CLASS: L03 P53 U14 X12
INVENTOR(S): ANDERSON, J T; NAGESH, V K; RUGBY, R C; RUBY, R C
PATENT ASSIGNEE(S): (HEWP) HEWLETT-PACKARD CO; (YOKH) YOKOGAWA HEWLETT PACKARD LTD
COUNTRY COUNT: 2
PATENT INFORMATION:

PATENT NO	KIND	DATE	WEEK	LA	PG
EP 299796	A	890118	(8903)*	EN	4
JP 01048326	A	890222	(8914)		
US 5071826	A	911210	(9201)		
US 5338507	A	940816	(9432)		4
US 5552370	A	960903	(9641)		4

APPLICATION DETAILS:

PATENT NO	KIND		APPLICATION	DATE
EP 299796	A		EP 88-306521	880715
JP 01048326	A		JP 88-176827	880715
US 5071826	A		US 89-423511	891013
US 5338507	A	CIP of	US 87-32414	870330
		Cont of	US 87-74799	870717
		Div ex	US 89-423511	891013
			US 91-751463	910829
US 5552370	A	CIP of	US 87-32414	870330
		Cont of	US 87-74799	870717
		Div ex	US 91-751463	910829
			US 94-182884	940118

FILING DETAILS:

PATENT NO	KIND		PATENT NO
US 5338507	A	Div ex	US 5071826
US 5552370	A	Div ex	US 5338507

PRIORITY APPLN. INFO: US 87-74799 870717; US 87-32414 870330; US 89-423511 891013; US 91-751463 910829; US 94-182884 940118

AN 89-017284 [03] WPIDS
CR 88-280154 [40]

AB EP 299796 A UPAB: 941010
The properties of multigranular ceramic superconducting material are improved by filling the inter-granular spaces with a metallic conductive material, pref. silver. The silver is formed in the inter-granular spaces by decompsn. of a silver cpd., such as silver neodecanoate, mercaptide or resinate. After formation of the inter-granular metallic conductive material the superconductor particles are sintered and oxygenated. The inter-granular material has a thickness of up to 0.1 microns.

USE/ADVANTAGE - The inter-granular silver increases the critical current and the mechanical strength and workability of the superconductor. The method may be used to make silver/superconductor thick film structures and bulk silver/superconductor.
0/0
Dwg.0/0

ABEQ US 5071826 A UPAB: 930923
Superconductive mixts are prepd by mixing organometallic Ag cpds with granular ceramic Cu-oxide based superconductors. The mixt is then heated to provide an Ag coating on the superconductor.

Further heating in an oxidising atmos causes oxygen to diffuse into the material and for the Ag to fill the intergranular spaces thus forming a **matrix** for the **superconductor** material.

ADVANTAGE - The material has good mechanical strength and can be used to make thick film structures. @

ABEQ US 5338507 A UPAB: 940928
Superconductor material is mfd. by (a) mixing Ag material with Cu-oxide based superconductor grains, and (b) heating to cause the intergranular Ag to electrically contact the grains. The Ag material is an Ag cpd. which decomposes to Ag upon heating, or is **elemental Ag.** The heating is carried out in the presence of O2 at above 500 deg.C. The superconductor grains may be sintered.

ADVANTAGE - Increased critical current and improved mechanical properties.
Dwg.0/0

ABEQ US 5552370 A UPAB: 961011
A superconductor ink for applying a superconductor thick film to a substrate by sintering the ink after application to the substrate, comprising: a number of copper oxide based ceramic superconductor grains; a silver compound in a solvent; and an organic carrier; where the silver compound is present in an amount sufficient to cover the copper-oxide based superconductor gains with **metallic silver** approximately 0.05 microns thick.
Dwg.0/0

=> file hca
FILE 'HCA' ENTERED AT 21:07:33 ON 13 JUL 1998

FILE COVERS 1967 - 7 Jul 1998 (980707/ED) VOL 129 ISS 2

This file contains CAS Registry Numbers for easy and accurate substance identification.

=> d l25 1-2 cbib abs hitind

L25 ANSWER 1 OF 2 HCA COPYRIGHT 1998 ACS
125:209870 Fracture toughness of YBa2Cu3O7-x superconductor containing Y2BaCuO5 and Ag prepared by MPMG process. Nakaya, Tohru; Shoji, Tetsuo (Faculty of Engineering, Tohoku University, Sendai, Japan). AMD, 193(Mechanics and Materials for Electronic Packaging, Vol. 3), 39-45 (English) 1994. CODEN: AMDVAS. ISSN: 0160-8835.
AB Toughness improvement of YBa2Cu3O7-x (YBCO) was studied by making composites of YBCO with Y2BaCuO5 and **Ag** by the **melt** powder melt growth (MPMG) process. Ag particles were added to reduce the cracks initiated in the matrix during this process without decreasing the superconducting property of the YBCO compd. Addn. of 10% Ag and 20 mol% Y2BaCuO5 yielded a YBCO composite with a KIC of 2.87 MPa.sqroot.m and a crit. c.d. >600 A/cm2.
CC 76-4 (Electric Phenomena)
Section cross-reference(s): 56, 57
ST fracture toughness barium yttrium cuprate composite; **superconductor** silver composite **fracture** toughness

L25 ANSWER 2 OF 2 HCA COPYRIGHT 1998 ACS
119:166059 Microstructural characteristics of melt-powder-melt-grown YBa2Cu3O7-x crystals. Miletich, R.; Murakami, M.; Preisinger, A.; Weber, H. W. (Atominstitut der Oesterreichischen Universitaeten, Wien, A-1020, Austria). Physica C (Amsterdam), 209(4), 415-20 (English) 1993. CODEN: PHYCE6. ISSN: 0921-4534.
AB Melt-powder-melt-grown crystals of high- crit. transition temp. (Tc) YBa2Cu3O7-x were prepd. from different chem. starting compns. They all show well-textured microstructures with characteristic differences and various amts. of included phases (Y2BaCuO5, Ba4Cu2PtO9, and metallic silver) depending on the starting compn. Detailed investigations with polarized reflected light, x-ray fluorescence (XRF), energy dispersive x-ray spectrometry (EDX), and x-ray diffraction reveal characteristic features of the microstructure such as the distribution of included phases as well as twinning and crack formation, which are related to local variations in oxygen content in these materials. Increasing silver contents result in a redn. of cracking. The occurrence of domain-like regions with distinct large twin lamellas is correlated

with the distribution of Y2BaCuO5 inclusions.
CC 57-2 (Ceramics)
Section cross-reference(s): 75, 76
IT 7440-22-4, **Silver**, uses
(in **melt**-grown barium yttrium cuprate **superconductors**, microstructure and **cracking** in relation to)
IT 109064-29-1D, Barium copper yttrium oxide ba2cu3yo7, oxygen-deficient
(melt-grown **superconductors**, microstructure and **cracking** in relation to included phases in)

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L86 ANSWER 1 OF 9 HCA COPYRIGHT 1998 ACS
128:325342 Growth of YBCO-Ag thin films (Tc(0) = 90 K) by pulsed laser ablation on polycrystalline Ba2EuNbO6; a new perovskite ceramic substrate for YBCO films. Kurian, J.; John, Asha M.; Sajith, P. K.; Koshy, J.; Pai, S. P.; Pinto, R. (Regional Res. Lab. (CSIR), Trivandrum, 695019, India). Mater. Lett., 34(3-6), 208-212 (English) 1998. CODEN: MLETDJ. ISSN: 0167-577X. Publisher: Elsevier Science B.V..
AB The development and characterization of a new substrate material Ba2EuNbO6 for Y Ba cuprate (YBCO) films are reported. Ba2EuNbO6 has a complex cubic perovskite structure [A2(BB')O6] with a **lattice** const. a = 8.455 .ANG.. The dielec. const. and loss factor of this material are in a range suitable for its use as a substrate material for microwave applications. **Superconducting** YBCO-Ag thin films have been grown in situ on polycryst. Ba2EuNbO6 by pulsed laser ablation technique and the optimum growth conditions have been established. The films exhibited (001) orientation of a YBCO orthorhombic phase and gave a zero resistivity **superconducting** transition at Tc(0) = 90 K with a transition width of 1.5 K.
CC 57-2 (Ceramics)
Section cross-reference(s): 75, 76
ST barium europium niobate perovskite substrate; **superconductor** substrate barium europium niobate perovskite
IT Ceramic substrates
(barium europium niobate; growth of Ba Y cuprate/Ag **superconductor** thin films by pulsed laser ablation on polycryst. Ba2EuNbO6 perovskite substrate)
IT **Superconductors**
(barium yttrium cuprate/silver films; growth of Ba Y cuprate/Ag **superconductor** thin films by pulsed laser ablation on polycryst. Ba2EuNbO6 perovskite substrate)
IT Crystal structure
Dielectric constant
Dielectric loss
(crystal structure and dielec. properties of Ba2EuNbO6 substrates for growth of Y Ba cuprate/Ag **superconductor** films by

pulsed laser ablation)
IT **Superconductivity**
(**supercond.** of Ba Y cuprate/Ag films grown on Ba2EuNbO6 substrates by pulsed laser ablation)
IT 12280-07-8, Barium europium niobium oxide Ba2EuNbO6
(ceramic substrates; growth of Ba Y cuprate/Ag **superconductor** thin films by pulsed laser ablation on polycryst. Ba2EuNbO6 perovskite substrate)
IT **7440-22-4**, Silver, processes
(**dopant**, Ba Y cuprate films; growth of Ba Y cuprate/Ag **superconductor** thin films by pulsed laser ablation on polycryst. Ba2EuNbO6 perovskite substrate)
IT 107539-20-8, Barium copper yttrium oxide
(**superconductor** films, silver-doped; growth of Ba Y cuprate/Ag **superconductor** thin films by pulsed laser ablation on polycryst. Ba2EuNbO6 perovskite substrate)

L86 ANSWER 2 OF 9 HCA COPYRIGHT 1998 ACS
127:112285 Sol-gel process for coating substrates with a ceramic high-temperature **superconductor.** Mayerhoefer, Thomas; Spreitzer, Uli; Renk, Karl Friedrich (Mayerhoefer, Thomas, Germany; Spreitzer, Uli; Renk, Karl Friedrich). Ger. Offen. DE 19546483 A1 970619, 7 pp. (German). CODEN: GWXXBX. APPLICATION: DE 95-19546483 951213.
AB The process comprises prepg. the soln., forming the sol, forming the gel, coating the substrate, and burning the gel in suitable, preferably O-contg., atm., and forming the **superconducting** coating in a suitable atm.
IC ICM C04B035-45
ICS C04B041-87
CC 57-2 (Ceramics)
Section cross-reference(s): 49, 55, 76
ST ceramic high temp **superconductor** coating; sol gel coating **superconductor**; oxide sol gel coating **superconductor** ; metal sol gel coating **superconductor;** barium copper yttrium oxide **superconductor;** bismuth calcium copper strontium oxide; mercury barium calcium copper oxide; thallium oxide **superconductor;** aluminum lanthanum oxide substrate coating; strontium titanate substrate coating; magnesia substrate coating; alumina substrate coating; zirconia substrate coating; gadolinium neodymium oxide coating; gallium lanthanum oxide substrate coating; stainless steel substrate coating
IT Sol-gel coating process
(ceramic high-temp. **superconductor** coating formation by)
IT Oxides (inorganic), formation (nonpreparative)
(high-temp. **superconductive** coatings; sol-gel process for formation of)
IT **Superconductors**
(high-temp., ceramic, coatings; sol-gel process for formation of)
IT Carboxylic acids, processes

(hydroxy, salts; in high-temp. **superconductive** coating formation by sol-gel process)

IT Carbonates, processes
Hydroxides (inorganic)
(in high-temp. **superconductive** coating formation by sol-gel process)

IT Metal alkoxides
Nitrates, processes
(in high-temp. **superconductive** coating formation by sol-gel process)

IT Pipes and Tubes
Plates
Wire
(steel; sol-gel process for high-temp. **superconductive** oxide coating formation on)

IT 1302-67-6, Spinel (Mg(AlO2)2) 1314-36-9, Yttria, uses 11113-84-1, Ruthenium oxide 58858-44-9, Barium ruthenium titanium oxide
(bonding interlayer; in high-temp. **superconductive** oxide coating formation by sol-gel process)

IT 7439-92-1, Lead, uses **7440-22-4**, Silver, uses 7440-62-2, Vanadium, uses 7440-69-9, Bismuth, uses
(**dopant;** in high-temp. **superconductive** oxide coating formation by sol-gel process)

IT 7440-57-5, Gold, uses
(foils; in high-temp. **superconductive** oxide coating formation by sol-gel process)

IT 107539-20-8, Barium copper yttrium oxide 130989-69-4, Barium bismuth calcium copper strontium thallium oxide
(high-temp. **superconductive** coatings; sol-gel process for formation of)

IT 114901-61-0, Bismuth calcium copper strontium oxide 124404-58-6, Barium calcium copper strontium thallium oxide 151248-93-0, Barium calcium copper mercury oxide
(high-temp. **superconductive** coatings; sol-gel process for formation of)

IT 107-15-3, 1,2-Ethanediamine, uses
(in high-temp. **superconductive** coating formation by sol-gel process)

IT 107-21-1, 1,2-Ethanediol, uses
(replacement of, by ethylenediamine; in high-temp. **superconductive** coating formation by sol-gel process)

IT 1309-48-4, Magnesia, uses 1344-28-1, Alumina, uses 7440-21-3, Silicon, uses 11136-69-9, Chromium nickel steel, uses 12060-59-2, Strontium titanate 12597-68-1, Stainless steel, uses 37226-47-4, Aluminum lanthanum oxide 55030-80-3, Gallium lanthanum oxide 64417-98-7, Yttrium zirconium oxide 132027-48-6, Gadolinium neodymium oxide (GdNdO3)
(substrates; sol-gel process for high-temp. **superconductive** oxide coating formation on)

IT 1314-23-4, Zirconia, uses

(yttria-stabilized, substrates; sol-gel process for high-temp. **superconductive** oxide coating formation on)

L86 ANSWER 3 OF 9 HCA COPYRIGHT 1998 ACS
127:54466 Role of silver doping in oxygen incorporation of oxide thin film. Kumar, D.; Oktyabrsky, S.; Kalyanaraman, R.; Narayan, J.; Apte, P. R.; Pinto, R.; Manoharan, S. S.; Hegde, M. S.; Ogale, S. B.; Adhi, K. P. (Department of Materials Science and Engineering, North Carolina State University, Raleigh, NC-27695-7916, USA). Mater. Sci. Eng., B, B45(1-3), 55-58 (English) 1997. CODEN: MSBTEK. ISSN: 0921-5107. Publisher: Elsevier.
AB A distinctive characteristic of silver in oxygen incorporation of oxide thin films during pulsed laser ablation has been discovered. Optical emission spectroscopy studies of laser-induced plume of Ag-target indicates the presence of AgO species whose concn. increases with an increase in oxygen partial pressure. The formation of AgO in laser-plume has been found to be very useful for the realization of high temp. **superconducting** YBa2Cu3O7-.vdelta. (YBCO) and giant magnetoresistive La0.7MnO3-.vdelta. (LMO) thin films with dramatically superior quality if the target materials contained a small amt. of silver. The improvement in the quality of these films is brought about by the supply of at. oxygen to oxide **lattices** during their formation. This becomes possible due to the fact that Ag, after it is ablated with other constituent materials in the target, gets moderately oxidized in an oxygen atm. and the oxidized species dissoc. back into Ag and nascent O at the substrate surface. The nascent oxygen is very highly reactive and is easily assimilated into the **lattice** of these compds.
CC 57-2 (Ceramics)
Section cross-reference(s): 56
IT Ceramic **superconductors**
(barium yttrium cuprate films; effect of silver doping on oxygen incorporation in oxide thin films prepd. by laser ablation)
IT **7440-22-4**, Silver, uses
(**dopant**; effect of silver doping on oxygen incorporation in oxide thin films prepd. by laser ablation)
IT 109064-29-1DP, Barium copper yttrium oxide (Ba2Cu3YO7), oxygen-deficient
(**superconductor** films; effect of silver doping on oxygen incorporation in oxide thin films prepd. by laser ablation)

L86 ANSWER 4 OF 9 HCA COPYRIGHT 1998 ACS
122:279379 Role of silver addition on mechanical and superconducting properties of high-Tc superconductors. Joo, J.; Singh, J. P.; Warzynski, T.; Grow, A.; Poeppel, R. B. (Energy Technology Division, Argonne National Laboratory, Argonne, IL, 60439, USA). Appl. Supercond., 2(6), 401-10 (English) 1994. CODEN: ASUEE6. ISSN: 0964-1807.
AB The effect of Ag addns. on the mech. and superconducting properties

of sintered bulk $YBa_2Cu_3O_x$ (YBCO), $Bi_2Sr_{1.7}CaCu_2O_x$ (BSCCO-2212), and $Bi_{1.8}Pb_{0.4}Sr_{2.2}Ca_2Cu_3O_x$ (BSCCO-2223) was evaluated. Strength and fracture toughness of YBCO and BSCCO bars increased with increasing Ag content up to 30 vol.% Ag. Addn. of 30 vol.% Ag to YBCO increased strength from 87 to 136 MPa and fracture toughness from 1.82 to 3.9 MPa.sqroot.m. Addn. of 30 vol.% Ag to 2212 and 2223 increased strength from 58 to 107 and 41 to 90 MPa, resp. Corresponding increases in fracture toughness were 1.89-2.79 and 1.09 to 1.94 MPa.sqroot.m, resp. These improvements in strength and fracture toughness are believed to be due to the presence of Ag particles that may induce compressive stresses in the **superconducting matrix** and resist crack propagation by pinning the propagating cracks. The values of strength and fracture toughness of BSCCO-30 vol.% Ag specimens are comparable to those of monolithic BSCCO obtained by sinter forging, hot pressing, and hot isostatic pressing. However, the hardness of YBCO and BSCCO decreased with increasing Ag contents because of the lower hardness of Ag. Addn. of Ag showed no adverse effects on superconducting properties (Jc and Tc) of YBCO or BSCCO superconductors.

CC 76-4 (Electric Phenomena)
Section cross-reference(s): 56, 57

ST cuprate superconductor silver addn; **fracture** cuprate **superconductor** silver; hardness cuprate superconductor silver; mp cuprate superconductor silver

IT **7440-22-4**, Silver, processes
(effect of Ag additive on properties of cuprate superconductors)

L86 ANSWER 5 OF 9 HCA COPYRIGHT 1998 ACS

122:220583 Role of internal stresses in fracture behavior of engineering composites. Singh, J. P.; Singh, D.; Kupperman, D. S.; Majumdar, S. (Energy Technology Division, Argonne National Laboratory, Argonne, IL, 60439, USA). High Perform. Compos. Proc. Int. Symp., 143-53. Editor(s): Chawla, K. K.; Liaw, P. K.; Fishman, S. G. Miner. Met. Mater. Soc.: Warrendale, Pa. (English) 1994. CODEN: 61AWAD.

AB The fracture behavior and microstructure of SiC fiber/Si_3N_4 matrix composites, and of Ag particle/$YBa_2Cu_3O_x$ (YBCO) **superconductor matrix** composites, together with internal residual strains in composite constituents, have been evaluated as a function of reinforcing fiber, particle content, and processing variables. Residual strains were measured by neutron diffraction with the Intense Pulsed Neutron Source and the General Purpose Powder Diffractometer at Argonne National Lab. Internal radial strains on SiC fibers in SiC fiber/Si_3N_4 composites decreased from 0.0015 at 8.4 vol.% fibers to 0.0010 at 23.3 vol.% fibers. This decrease in radial strain with increasing fiber vol. fraction is expected to reduce frictional, and hence interfacial sliding stresses between the SiC fibers and Si_3N_4 matrix; this is in agreement with interfacial shear strengths measured by the fiber pushout technique. Similar relationships between residual strain and interfacial shear strength were obsd. in composites that were

hot isostatically pressed (HIPed). For YBCO/Ag composites, tensile strain in the Ag phase was as high as 0.085%, whereas compressive strain in the YBCO phase reached 0.09%. The presence of compressive strain (stress) improved the strength of YBCO from .apprx.190 to 223 MPa. Implications of the effects of residual stresses on interfacial characteristics and resulting composite mech. properties and fracture behavior are discussed.

CC 57-2 (Ceramics)
Section cross-reference(s): 76

ST composite fracture internal stress; silicon nitride composite fracture internal stress; silicon carbide fiber composite fracture stress; cuprate **superconductor** composite **fracture** internal stress; barium yttrium cuprate composite fracture stress

IT Superconductors
(effect of component internal stresses on fracture properties of Ag particle/YBa2Cu3Ox **superconductor matrix** composites)

IT **7440-22-4**, Silver, properties 107539-20-8, Barium yttrium cuprate
(superconductor composites; effect of component internal stresses on fracture properties of Ag particle/YBa2Cu3Ox **superconductor matrix** composites)

L86 ANSWER 6 OF 9 HCA COPYRIGHT 1998 ACS

121:71249 Effects of milling and Ag doping on the fabrication of LaBa2Cu3Oy **superconductor**. Fang, Tsang Tse; Huang, Jao Wei; Wu, Ma Shine (Dep. Mater. Sci. Eng., Natl. Cheng Kung Univ., Tainan, 70101, Taiwan). J. Mater. Res., 9(6), 1369-75 (English) 1994. CODEN: JMREEE. ISSN: 0884-2914.

AB The effects of milling and Ag addn. on the decompn. of single-phase LaBa2Cu3Oy were evaluated. The decompn. of milled single-phase LaBa2Cu3Oy powders when sintered in pure N2 is attributed to the introduction of strain in the **lattice** which causes the instability of the structure. The possible reasons why single-phase LaBa2Cu3Oy could be synthesized by sintering in pure N2 at high temps. and its transition width is always broadened are proposed. The decompn. of compacts of unmilled powders of single-phase LaBa2Cu3Oy when sintered in pure N2 for a long time is due to the fact that O diffuses along the grain boundaries and evolves through the surface of the specimens. Ag might segregate to the grain boundaries and prevent decompn. Probably to obtain a high quality LaBa2Cu3Oy, sintering in the reduced atm. to achieve the proper O content is required. Reduced atm. and Ag addn. could enhance the densification rate. For Ag-doped specimens, Tc is highest for x = 0.0001, but decreases for x > 0.0001.

CC 76-4 (Electric Phenomena)

ST barium copper lanthanum oxide **supercond**; sintering barium copper lanthanum oxide; milling barium copper lanthanum oxide; silver doping barium copper lanthanum oxide; **superconductor** barium copper lanthanum oxide

IT **Superconductors**

(barium copper lanthanum oxide, effects of milling and silver doping on)
IT Size reduction
(of barium copper lanthanum oxide **superconductor**)
IT Controlled atmospheres
(reducing, for sintering of barium copper lanthanum oxide **superconductor**)
IT **Superconductivity**
(crit. temp., of barium copper lanthanum oxide, effects of milling and silver doping on)
IT **7440-22-4**, Silver, uses
(**dopant, supercond.** of barium copper lanthanum oxide in relation to)
IT 7782-44-7, Oxygen, properties
(grain-boundary diffusion of, in sintering of barium copper lanthanum oxide **superconductor**)
IT 7727-37-9, Nitrogen, uses
(sintering atm., for barium copper lanthanum oxide **superconductor**)
IT 65107-47-3, Barium copper lanthanum oxide
(**supercond.** of, effects of milling and silver doping on)

L86 ANSWER 7 OF 9 HCA COPYRIGHT 1998 ACS
121:41048 Effect of silver addition on the microstructure of YBa2Cu3O7-x. Yun, Jondo; Harmer, Martin P.; Chou, Ye T. (Dep. Mater. Sci. Eng., Lehigh Univ., Bethlehem, PA, 18015-3195, USA). J. Mater. Res., 9(6), 1342-9 (English) 1994. CODEN: JMREEE. ISSN: 0884-2914.
AB The variation of grain morphol. in Ag-doped **superconducting** YBa2Cu3O7-x was investigated as a function of sintering temp., atm., and amt. of Ag addn. In the presence of the liq. phase formed at 925.degree. for undoped specimens and at 910.degree. for Ag-doped specimens, the grain shape and size changed drastically from small and nearly equiaxed to large and elongated. The anisotropy in grain shape was sensitive to both the Ag content and sintering atm. On the other hand, while the grain size was generally insensitive to the atm., it decreased with increasing Ag content. The Ag phase, if sufficiently large, blocked grain growth in the **matrix**. The amt. of Ag for effective blocking was predicted from a microstructural model, and the prediction was in agreement with exptl. results.
CC 57-2 (Ceramics)
Section cross-reference(s): 76
ST barium yttrium cuprate microstructure silver doping; **superconductor** cuprate microstructure silver doping
IT **Superconductors**
(barium yttrium cuprate, microstructure of, effect of silver doping on)
IT **7440-22-4**, Silver, uses
(**dopant,** in barium yttrium cuprate

superconductor, microstructure in relation to)
IT 109064-29-1D, Barium copper yttrium oxide ($Ba_2Cu_3YO_7$), oxygen-deficient
(**superconductors**, microstructure of, effect of silver doping on)

L86 ANSWER 8 OF 9 HCA COPYRIGHT 1998 ACS
116:220080 Elastic and plastic behavior of lead- and silver-doped bismuth strontium calcium copper oxide **superconductors.** Muralidhar, M.; Kishore, K. Nanda; Ramana, Y. V.; Babu, V. Hari (Dep. Phys., Osmania Univ., Hyderabad, 500 007, India). Mater. Sci. Eng., B, B13(3), 215-19 (English) 1992. CODEN: MSBTEK. ISSN: 0921-5107.
AB $Bi_{1.7}Pb_{0.3}Ag_xSr_2Ca_2Cu_3O_y$ ($x = 0.0$, 0.1, 0.2, 0.3, and 0.4) **superconducting** samples were prepd. by the **matrix** method. From x-ray diffraction and d.c. elec. resistivity results, it was confirmed that Ag doping does not poison the **supercond.** and the crit. transition temp. at zero resistance varied between 95 and 105 K. The ultrasonic compressional (V1) and shear (Vs) velocities at room temp. were detd. for all the samples by the ultrasonic pulse transmission technique. The Young's modulus and rigidity modulus values were calcd. and were found to decrease with increasing Ag dopant. Microhardness measurements were performed using the indentation method. The hardness decreased with increasing Pb concn. and further decreased with addn. of Ag. The hardness values were calcd. for all the samples from the elastic data, and these values are in good agreement with the exptl. data.
CC 57-2 (Ceramics)
Section cross-reference(s): 76
ST bismuth cuprate **superconductor** elasticity plasticity; calcium bismuth cuprate **superconductor** elasticity plasticity; strontium bismuth cuprate **superconductor** elasticity plasticity; silver doping bismuth cuprate elasticity plasticity; lead doping bismuth cuprate elasticity plasticity
IT **Superconductors**
(bismuth calcium strontium cuprate, elastic and plastic behavior of lead-doped and silver-doped)
IT 7439-92-1, Lead, uses **7440-22-4**, Silver, uses
(**dopant**, bismuth calcium strontium cuprate **superconductor** contg., elastic and plastic behavior of)
IT 114901-61-0, Bismuth calcium copper strontium oxide
(**superconductors**, elastic and plastic behavior of lead-doped and silver-doped)

L86 ANSWER 9 OF 9 HCA COPYRIGHT 1998 ACS
116:111915 Microstructure and phase formation of ceramics from the neodymium-barium-copper-silver-oxygen system. Dimitriev, I.; Kashtieva, E.; Khinkov, P.; Gattev, E.; Staneva, A.; Dzhambazov, S.; Vlakhov, E. (Higher Inst. Chem. Technol., Sofia, 1756, Bulg.). J. Mater. Sci. Lett., 11(2), 111-13 (English) 1992. CODEN: JMSLD5. ISSN: 0261-8028.

AB The formation of 123 phase in the Nd-Ba-Cu-Ag-O and Nd-Y-Ba-Cu-Ag-O systems and the microstructural peculiarities of the synthesized ceramic materials were studied. All specimens were prepd. by conventional ceramic technol. using oxides as starting materials and BaCO3 for BaO. The synthesis was carried out in air at 930.degree. for 12 h. The specimens were cooled slowly (50-80.degree.). The dependence of the structural and phase changes on the heat treatment conditions was examd. The phases were detd. using an x-ray diffractometer, the microanal. were made with a electron probe microanalyzer with an energy-dispersive, x-ray anal. system, and the micromorphol. was obsd. by SEM. The introduction of Ag leads to the formation of multiphase ceramic materials. The Ag is distributed mainly between the grain boundaries. A small quantity of Ag enters in the **lattice** of the 123 crystals. The presence of Y and Nd simultaneously in the 123 phase does not change the microstructure. Minor phases BaO.CuO and CuO were obsd.

CC 57-2 (Ceramics)
Section cross-reference(s): 76

IT **Superconductors**
(barium neodymium silver yttrium cuprate, microstructure and phase formation in)

IT **7440-22-4**, Silver, uses
(**dopant**, in barium neodymium yttrium cuprate **superconductor**, properties in relation to)

IT 111419-84-2, Barium copper neodymium oxide 114901-50-7, Barium copper neodymium yttrium oxide
(**superconductors**, silver in, microstructure and phase formation in relation to)

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L91 ANSWER 1 OF 6 HCA COPYRIGHT 1998 ACS
127:43034 **Ag-doping** induced coordination incompatibility and its effect on superconductivity in YBCO. Behera, D.; Mishra, N. C.; Patnaik, K. (Dep. Physics, Utkal Univ., Bhubaneswar, 751 004, India). J. Supercond., 10(1), 27-32 (English) 1997. CODEN: JOUSEH. ISSN: 0896-1107. Publisher: Plenum.

AB A series of YBa2CU3-xAgxO7-y specimens with x .ltoreq. 0.12 was

studied to explore the Ag substitution effect on O stoichiometry, **lattice** parameter, and **superconducting** properties. With the specimens prepd. at a relatively low sintering temp., **Ag** was **doped** into the grains rather than pptd. at grain boundaries. Unlike in the case of YBCO/Ag composites or in doped systems annealed at high temps. where Ag occupies mostly the grain boundary, the present system showed a drastic change in Tc, O stoichiometry, and lattice parameter with Ag concn. and indicates substitution of Ag at Cu(I) sites in the grains. The stable 2-fold O coordination of Ag substituting for Cu(I) explains the obsd. variation in O deficiency with Ag content. A crystallochem. anal. has been made to reveal the crucial role of Ag-substitution-induced coordination incompatibility and charge state instability on carrier concn. and crit. temp.

CC 76-4 (Electric Phenomena)

ST cuprate superconductor **silver doping** effect

IT Superconductors
(**Ag-doping** induced coordination incompatibility and its effect on supercond. in YBCO)

IT 109064-29-1D, Barium copper yttrium oxide (ba2cu3yo7), oxygen-deficient
(**Ag-doping** induced coordination incompatibility and its effect on supercond. in)

IT 7440-22-4, **Silver**, uses
(**Ag-doping** induced coordination incompatibility and its effect on supercond. in YBCO)

L91 ANSWER 2 OF 6 HCA COPYRIGHT 1998 ACS

121:165075 Thermal conductivity of **Ag-doped** Bi-2212 superconducting materials prepared by the floating zone method. Matsukawa, M.; Tatezaki, F.; Noto, K.; Fujishiro, H.; Michishita, K.; Kubo, Y. (Faculty Engineering, Iwater University, Morioka, 020, Japan). Cryogenics, 34(8), 685-8 (English) 1994. CODEN: CRYOAX. ISSN: 0011-2275.

AB The thermal cond. .kappa. of **Ag-doped** Bi-2212 superconducting materials prepd. by the floating zone method has been measured between 15 and 200 K. **Ag-doping** into the **superconducting matrix** yields a large enhancement of .kappa. over a wide range of measured temps., and the thermal cond. of a 15 wt % **silver-doped** sample in the low temp. region becomes about one order of magnitude larger than that of an undoped sample. This behavior is discussed in terms of the percolation theory. From the viewpoint of cryogenic engineering, it is found that the Ag grains operate as 'intrinsic stabilizers' in the Bi-2212 superconducting materials.

CC 69-5 (Thermodynamics, Thermochemistry, and Thermal Properties)
Section cross-reference(s): 76

ST bismuth calcium copper strontium oxide silver; **silver doping** cuprate superconductor thermal cond; percolation silver cuprate superconductor thermal cond

IT Electric resistance

(of **silver-doped** superconductive bismuth
calcium copper strontium oxide)
IT Thermal conductivity and conduction
(of **silver-doped** superconductive bismuth
calcium copper strontium oxide, percolation theory in relation
to)
IT Superconductors
(**silver-doped** superconductive bismuth calcium
copper strontium oxide, thermal cond. of, percolation theory in
relation to)
IT Percolation
(theory, **silver doping** effect on thermal
cond. of bismuth calcium copper strontium oxide in relation to)
IT 114901-61-0, Bismuth calcium copper strontium oxide
(thermal cond. of **silver-doped**
superconductive, percolation theory in relation to)

L91 ANSWER 3 OF 6 HCA COPYRIGHT 1998 ACS
120:20885 **Silver-doped** bismuth lead strontium
calcium copper oxide [(Bi,Pb)2Sr2Ca2Cu3O10]/Ag high-temperature
superconducting composites. Guo, Y. C.; Liu, H. K.; Dou, S. X.
(School of Materials Science and Engineering, The University of New
South Wales, PO Box 1, Kensington, NSW, 2033, Australia). Physica C
(Amsterdam), 215(3-4), 291-6 (English) 1993. CODEN: PHYCE6. ISSN:
0921-4534.
AB The effect of **Ag doping** on the microstructure
and transport properties of Ag-sheathed (Bi,Pb)2Sr2Ca2Cu3AgxO10
composite tapes was studied through SEM observation and elec.
measurements, including crit. temp. (Tc), crit. c.d. (Jc) and Jc
behavior in magnetic field for samples with varying dopant levels (x
= 0.0-3.5). **Ag doping** has no noticeable effect
on the Tc of the samples but influences the sample Jc, which
decreases with increasing **Ag doping** content when
the samples are sintered at the same temp. A slight improvement of
Jc behavior in magnetic field is obsd. for the lightly doped
samples, while higher-level doping shows a small degrdn. in the Jc
behavior. Ag exists as an isolated phase inside the tapes without
visible reaction, and diffusion within the **superconductor
matrix** has no influence on Tc. But the undesirable shape
and size of the Ag particles cause grain misorientation, and hence
decreases Jc. The influence of **Ag doping** on the
Jc behavior in magnetic field is a combined effect of grain
alignment, grain cond. and flux pinning.
CC 76-4 (Electric Phenomena)
ST bismuth calcium copper lead strontium oxide; **silver
doping** cuprate superconductor; crit temp current silver
oxide composite; tape silver sheathed cuprate
IT Sintering
(crit. parameters of **silver-doped** bismuth
calcium copper lead strontium oxide composite with silver
subjected to)

IT Surface structure
(of **silver-doped** bismuth calcium copper lead strontium oxide composite with silver)
IT Superconductivity
(crit. c.d., of **silver-doped** bismuth calcium copper lead strontium oxide composite with silver)
IT Superconductivity
(crit. temp., of **silver-doped** bismuth calcium copper lead strontium oxide composite with silver)
IT Tapes (material)
(superconductive, superconducting properties of **silver-doped silver** composite tape of bismuth calcium copper lead strontium oxide)
IT 7440-22-4, Silver, miscellaneous 121428-11-3
(superconducting properties of **silver-doped silver** composite tape of bismuth calcium copper lead strontium oxide)

L91 ANSWER 4 OF 6 HCA COPYRIGHT 1998 ACS
115:221470 Complications in the measurement of the magnetic field penetration depth in yttrium barium copper oxide (YBa2Cu3Ox) and bismuth strotium calcium copper oxide (Bi2Sr2CaCu2Ox) superconductors by electron spin resonance line broadening of surface paramagnetic probes. Masiakowski, Jerzy T.; Puri, Micky; Kevan, Larry (Dep. Chem., Univ. Houston, Houston, TX, 77204-5641, USA). J. Phys. Chem., 95(22), 8968-72 (English) 1991. CODEN: JPCHAX. ISSN: 0022-3654.
AB The ESR line broadening of a paramagnetic probe on an oxide superconductor below the superconducting crit. transition temp. is shown to depend on the parallel to perpendicular orientation of the probe to the applied magnetic field. This effect must be considered when using the line broadening assocd. with the magnetic flux lattice to measure the magnetic field penetration depth in YBa2Cu3Ox and Bi2Sr2CaCu2Ox sintered superconductors are 1400 and 2850 .ANG., resp. A strong effect of **silver doping** in YBaCuO superconductors on the magnetic field penetration depth is also shown. It is shown that the temp. below the superconducting crit. transition temp. at which significant line broadening from the flux lattice occurs is better identified as the magnetic flux lattice melting temp. This is particularly clear in the BiSrCaCuO superconductor in which the flux lattice melting temp. lies significantly below the superconducting crit. transition temp. This also supports that line broadening assocd. with the magnetic flux lattice can be isolated from other sources of broadening.
CC 77-6 (Magnetic Phenomena)
Section cross-reference(s): 76
ST cuprate superconductor magnetic fieldf penetration; ESR cuprate superconductor field penetration; yttrium barium cuprate superconductor ESR; bismuth strontium calcium cuprate superconductor ESR; flux **lattice** ESR cuprate **superconductor**

L91 ANSWER 5 OF 6 HCA
115:39780 Effects of **silver/silver** oxide **doping** on the superconductivity of the bismuth lead strontium calcium copper oxide (Bi1.84Pb0.34Sr1.91Ca2.03Cu3.06Oy) oxide. Kim, Chan Joong; Hahn, Myoung Seoup; Suhr, Dong Soo; Kim, Ki Baik; Lee, Ho Jin; Lee, Hee Gyoun; Hong, Gye Won; Won, Dong Yeon (Korea At. Energy Res. Inst., Daejun, 305 353, S. Korea). Mater. Lett., 11(3-4), 79-84 (English) 1991. CODEN: MLETDJ. ISSN: 0167-577X.

AB Effects of sintering atm. on the formation of the 2-2-2-3 phase in the **Ag-doped** and the Ag2O-doped PbBiSrCaCuO systems were investigated in pure O2, air and O2/Ar = 1/13. The formation of the 2-2-2-3 phase is enhanced with increasing sintering time in air and under low O partial pressure, but suppressed in pure O2. Tc Also increases with increasing sintering time, irresp. of the type of doping element and independent of their content up to 20 wt.% Ag and 21.17 wt.% Ag2O. A considerable interaction among superconducting phases and the Ag or Ag2O is not obsd. in all the atms. The **doped Ag** is present as an isolated particle in the **superconducting matrix**, whereas the doped Ag2O is reduced to Ag metal phase and is also present as an isolated particle in the matrix.

CC 76-4 (Electric Phenomena)
Section cross-reference(s): 66, 75

ST superconduct bismuth calcium lead strontium cuprate; **silver** oxide **doping** lead strontium superconductor

IT Surface structure
(of bismuth calcium copper lead strontium oxide superconductors **doped** with **silver** and silver oxide)

IT Crystal structure
(of bismuth calcium copper lead strontium oxide superconductors **doped** with **silver** and silver oxide, sintering time dependence for)

IT 116739-98-1, Bismuth calcium copper lead strontium oxide
(superconducting crit. temp. of, **doped** with **silver** and silver oxide, sintering time dependence for)

L91 ANSWER 6 OF 6 HCA
112:130227 Contact resistance of **silver-doped** yttrium barium copper oxide in a magnetic field. Jin, S.; Graebner, J. E.; Tiefel, T. H.; Kammlott, G. W. (AT and T Bell Lab., Murray Hill, NJ, 07974, USA). Appl. Phys. Lett., 56(2), 186-8 (English) 1990. CODEN: APPLAB. ISSN: 0003-6951.

AB The apparent contact resistance at the Ag-particle/superconductor interface in sintered YBa2Cu3O7-.delta. increases considerably in applied magnetic fields (e.g., by .apprx.300% at H = 200 G, at 77 K). However, in a melt-textured sample where the Ag particles are dispersed within the high Jc grain, no noticeable field dependence of .rho.c is obtained for H up to 1 T. The field dependence of apparent .rho.c in fine-grained material is, therefore, attributed mostly to the local current concn. in the superconductor near the Ag

particles. It causes Jc to be locally exceeded, with the voltage drop contributing the the apparent .rho.c value even though the av. c.d. in the **superconductor matrix** is well below
the Jc value. The importance of avoiding local current concn. by proper design and processing of silver contacts, and minimizing the low Jc(H) region near the interface, is pointed out.
CC 76-4 (Electric Phenomena)
IT Electric resistance
(contact, of **silver-doped** barium copper
oxide)

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(FILE 'WPIDS, JAPIO' ENTERED AT 21:14:52 ON 13 JUL 1998)
L92 736 FILE WPIDS
L93 128 FILE JAPIO
TOTAL FOR ALL FILES
L94 864 S L89
L95 0 FILE WPIDS
L96 0 FILE JAPIO
TOTAL FOR ALL FILES
L97 0 S L8 AND L94

=> d 187 1-13 cbib abs hitind

L87 ANSWER 1 OF 13 HCA COPYRIGHT 1998 ACS
128:199265 AC losses of twisted high-Tc superconducting multifilament Bi2223 tapes with a mixed matrix of Ag and BaZrO3. Kwasnitza, K.; Clerc, St.; Flukiger, R.; Huang, Y. B.; Grasso, G. (Paul Scherrer Institut, Villigen, Switz.). Inst. Phys. Conf. Ser., 158(Applied Superconductivity 1997, Vol. 2), 1389-1392 (English) 1997. CODEN: IPCSEP. ISSN: 0951-3248. Publisher: Institute of Physics Publishing.
AB In twisted multifilament Bi2223/Ag tapes the introduction of BaZrO3 barriers around the **filaments** increases the transverse
matrix resistivity at 77 K by a factor of 10 and shifts the coupling loss max. in alternating magnetic fields from 4.5 to about 45 Hz. For 50 Hz applications the twist length should be further reduced and the barrier thickness increased.
CC 76-4 (Electric Phenomena)
Section cross-reference(s): 56, 57
ST bismuth calcium copper strontium oxide superconductor; ac loss
superconductor matrix resistivity barrier;
alternating magnetic field coupling loss max
IT **7440-22-4**, Silver, properties
(sheath; AC losses of twisted high-Tc superconducting multifilament Bi2223 tapes with a mixed matrix of Ag and BaZrO3)
IT 114901-61-0, Bismuth calcium copper strontium oxide
(superconductor multifilament **wires**; AC losses of
twisted high-Tc superconducting multifilament Bi2223 tapes with a mixed matrix of Ag and BaZrO3)

L87 ANSWER 2 OF 13 HCA COPYRIGHT 1998 ACS
128:199170 Lattice distortion measurement of (Bi,Pb)2Sr2Ca2Cu3O10+x oxide in silver clad **wires** with mechanical deformation.
Li, S.; Zhao, J. C.; Hu, Q. Y.; Liu, H. K.; Dou, S. X.; Gao, W. (Department Chemical Materials Engineering, University Auckland, Auckland, N. Z.). Physica C (Amsterdam), 294(1&2), 105-114 (English) 1998. CODEN: PHYCE6. ISSN: 0921-4534. Publisher: Elsevier Science B.V..

AB Mech. deformation plays an important role in achieving high crit. c.d. of the Ag clad Bi2223 superconductor tapes by producing (001) grain alignment. High densities of dislocation networks and lattice distortion were therefore introduced to the Bi2223 crystals. The strain which resulted from lattice distortion provides energy for recrystn. of Bi2223 crystals, and also affects the grain alignment in the subsequent thermal treatments. The present work is to measure and study the lattice distortion in the Bi2223 crystals produced by mech. deformation. X-ray diffraction has been used to characterize the crystal structure, and Fourier transformation has been adapted to sep. the peak broadening effects of lattice distortion and grain size. The results indicate that certain amts. of lattice distortion were produced in the brittle Bi2223 oxide by mech. deformation, and multi-step structures with the thickness equiv. to 6 layers to Bi2223 oxide cells (.apprx.22 nm) along the c-axis direction were built in the Bi2223 tapes with heavy mech. deformation.

CC 76-4 (Electric Phenomena)
Section cross-reference(s): 75

ST bismuth calcium copper lead strontium oxide; cuprate **superconductor lattice** distortion mech deformation

IT Crystal dislocations
Crystal structure
Crystallite size
Cuprate **superconductors**
Deformation (mechanical)
Strain
Superconducting tapes
(**lattice** distortion measurement of (Bi,Pb)2Sr2Ca2Cu3O10+x oxide in silver clad **wires** with mech. deformation)

IT **7440-22-4**, Silver, uses
(lattice distortion measurement of (Bi,Pb)2Sr2Ca2Cu3O10+x oxide in silver clad **wires** with mech. deformation)

IT 121428-11-3D, Bismuth calcium copper lead strontium oxide (Bi0-2Ca2Cu3Pb0-2Sr2O10), oxygen-excess
(lattice distortion measurement of (Bi,Pb)2Sr2Ca2Cu3O10+x oxide in silver clad **wires** with mech. deformation)

L87 ANSWER 3 OF 13 HCA COPYRIGHT 1998 ACS
126:68483 Manufacture and properties of Bi-2212-based Ag-sheathed **wires.** Tenbrink, Johannes; Krauth, Helmut (Vacuumschmelze

GmbH, Hanau, Germany). Appl. Phys. (N. Y.), 6(Bismuth-Based High-Temperature Superconductors), 369-390 (English) 1996. CODEN: APPYEK. ISSN: 1080-9198. Publisher: Dekker.

AB Bi-2212 high-temp. superconducting multifilamentary **wires** are promising candidates for use in magnet technol. at <25 K. Long lengths of **wires** with const. properties along the **wire** can be produced by the powder-in-tube technique. Since the **superconductor**:Ag **matrix** ratio can be kept high (.apprx.0.7:1), relatively high overall crit. c.d. values are achieved. The **wires** behave isotropically in an external magnetic field and can be insulated with ceramic **fibers** and wound into coils prior to the final annealing. By using Ag alloys as matrix material rather than pure Ag, the stiffness and strength of the **wires** can be enhanced to tech. relevant levels. Test windings and small test coils were built and tested, indicating that the wind and react technique is feasible.

CC 76-4 (Electric Phenomena)
Section cross-reference(s): 77

ST bismuth based silver sheathed superconducting **wire**

IT Superconductor coils
(from Bi-2212-based superconducting **wires** sheathed with silver)

IT Superconducting **wire**
(manuf. of Bi-2212-based superconducting **wires** sheathed with silver)

IT Ceramic **fibers**
(manuf. of Bi-2212-based superconducting **wires** sheathed with silver and insulated with)

IT **7440-22-4**, Silver, processes 11144-51-7 12629-81-1 37263-65-3
(manuf. of Bi-2212-based superconducting **wires** sheathed with)

IT 115866-34-7D, Bismuth calcium copper strontium oxide (Bi2CaCu2Sr2O8), oxygen-excess
(manuf. of superconducting **wires** from silver-sheathed)

L87 ANSWER 4 OF 13 HCA COPYRIGHT 1998 ACS

126:53886 Multifilamentary superconducting composite and its manufacture. Snitchler, Gregory L.; Riley, Gilbert N., Jr.; Malozemoff, Alexis P.; Christopherson, Craig J. (American Superconductor Corporation, USA). PCT Int. Appl. WO 9636485 A1 961121, 54 pp. DESIGNATED STATES: W: AU, CA, CN, JP, NZ, RU; RW: AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE. (English). CODEN: PIXXD2. APPLICATION: WO 96-US7061 960517. PRIORITY: US 95-444564 950519.

AB The invention provides a multifilamentary superconducting composite article comprising multiple substantially elec. decoupled domains, each including .gtoreq.1 fine, preferably twisted **filaments** of a desired superconducting oxide material. In a preferred embodiment, the article comprises a matrix, which substantially comprises a noble metal, a conductive jacketing layer surrounding

the matrix, a plurality of discrete **filament** decoupling layers, each comprising an insulating material, disposed within the matrix to sep. the matrix into a plurality of substantially elec. decoupled domains, a plurality of **filaments**, each comprising a desired superconducting oxide, which are disposed within and essentially encapsulated by the matrix and chem. isolated thereby from the decoupling layers, and each of the elec. decoupled domains contains .gtoreq.1 **filament**. It provides multifilamentary articles that exhibit high d.c. performance characteristics and a.c. performance markedly superior to any currently available for these materials. A process and intermediate for making the article are also provided.

IC ICM B32B009-00

CC 76-4 (Electric Phenomena)

IT Transition metals, processes
(noble; prepn. of multifilamentary **superconducting** composites in **matrixes** from)

IT **7440-22-4**, Silver, processes 10043-11-5, Boron nitride, processes 11130-73-7, Tungsten carbide 109064-29-1D, Barium copper yttrium oxide (Ba2Cu3YO7), oxygen-deficient 116739-98-1, Bismuth calcium copper lead strontium oxide
(prepn. of multifilamentary superconducting composites contg.)

L87 ANSWER 5 OF 13 HCA COPYRIGHT 1998 ACS

125:236306 Superconductor devices, permanent current switches, superconductor **cables**, and manufacturing thereof. Aihara, Katsuzo; Hara, Nobuhiro; Suzuki, Takaaki; Maki, Naoki (Hitachi Ltd, Japan). Jpn. Kokai Tokkyo Koho JP 08190817 A2 960723 Heisei, 8 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 95-656 950106.

AB The superconductor **cables** of superconductive **filaments** packed in matrix **wires** provide an inner matrix material with its sp. resistance at .gtoreq.10 .mu..OMEGA.cm, an outer matrix material with its sp. resistance at .ltoreq.0.1 .mu..OMEGA.cm, an outer insulator layer for external insulation, and the total **cable** with its av. longitudinal sp. resistance for normal cond. at .gtoreq.1 .mu..OMEGA.cm. The outer matrix material is longitudinally intermittently provided along the **cables**. The inner and outer matrix materials may be Cu-Ni or Cu-Sn alloy and Cu, resp. The superconductive **filament** material may be Nb-Ti, Nb-Sn, or Nb-Al compd. materials. The **cables** provides permanent current switches with reliable operation for its electromagnetic stability and gives the resistance significantly increased as supercond. is not performed.

IC ICM H01B012-10
ICS C22F001-00; H01B013-00; H01H050-00; H01L039-20

CC 76-4 (Electric Phenomena)
Section cross-reference(s): 56

ST niobium alloy **filament** superconductor **cable** manuf; permanent current switch superconductor **cable** manuf; copper nickel tin alloy **matrix** **superconductor**

IT Electric switches and switching
(permanent current; superconductor devices, permanent current switches, superconductor **cables**, and manufg. thereof)
IT Superconductivity
(superconductor devices, permanent current switches, superconductor **cables**, and manufg. thereof)
IT **Filaments**
(superconductor; superconductor devices, permanent current switches, superconductor **cables**, and manufg. thereof)
IT Electric **cables**
(superconductive, superconductor devices, permanent current switches, superconductor **cables**, and manufg. thereof)
IT 7429-90-5, Aluminum, properties **7440-22-4**, Silver, properties 7440-50-8, Copper, properties 11101-30-7 12668-36-9
(cable matrix; superconductor devices, permanent current switches, superconductor **cables**, and manufg. thereof)
IT 12683-47-5 39396-75-3 54834-31-0
(superconductor **filament;** superconductor devices, permanent current switches, superconductor **cables**, and manufg. thereof)

L87 ANSWER 6 OF 13 HCA
124:74128 Method of making high-temperature multifilamentary superconductors. Hauner, Franz; Tiefel, Guenter; Herkert, Werner; Proelss, Norbert; Neumueller, Heinz-Werner (Siemens A.-G., Germany). Eur. Pat. Appl. EP 683533 A1 951122, 8 pp. DESIGNATED STATES: R: DE, FR, GB. (German). CODEN: EPXXDW. APPLICATION: EP 95-106859 950505. PRIORITY: DE 94-4417426 940518.
AB In prepn. of an extended superconductor with many **wires** of high-temp. superconductor embedded in a Ag matrix by prepg. a starting material from the matrix with a predetd. no. of cores of a precursor of the superconductor, subjecting it to multiple deformations, and heat treating .gtoreq.1 time in an O-contg. atm. to form the high-temp. superconductor, an extrusion billet from the matrix material is provided with the predetd. no. of holes, which are filled with the precursor and hermetically sealed, and this starting body is extruded at a temp. below the recrystn. temp. of the matrix material.
IC ICM H01L039-24
CC 76-4 (Electric Phenomena)
ST multifilamentary high temp superconductor prepn; silver **matrix** multifilamentary **superconductor** prepn
IT **7440-22-4**, Silver, processes
(prepn. of multifilamentary high-temp. **superconductors** in **matrix** of)

L87 ANSWER 7 OF 13 HCA
120:336183 Processing and property evaluation of metal **matrix** **superconducting** composites. Rao, Appajosula S. (Nav. Surf. Warf. Cent., Annapolis, MD, 21402, USA). Int. Conf. Process. Mater.

Prop., 1st, 189-93. Editor(s): Henein, Hani; Oki, Takeo. Miner. Met. Mater. Soc: Warrendale, Pa. (English) 1993. CODEN: 59TDAS.

AB In order to obtain flexible superconducting **wires** and tapes, both aluminum and silver matrix YBa2Cu3O6+x composites were processed. The superconducting properties of these composites were analyzed as a function of the metal concn. The results suggest that silver forms superconducting composites in the concn. range 0-72 wt. %. However, the superconducting transition temp. tend to depend upon the concn. of the silver in the composite. The crit. current value (Jc) measured at the liq. nitrogen temp. was found to depend upon the concn. of silver in the composite and the abs. value ranges from 25-100 amp cm-2. The aluminum based composites does not show any superconducting behavior for aluminum concn. below 58 wt. %. However, the samples contg. 60 wt. % aluminum showed two transitions around 90 K and 140 K. The obsd. transitions are very sensitive to the applied current and the processing parameters.

CC 76-4 (Electric Phenomena)

ST barium copper yttrium oxide superconductor composite; silver cuprate superconductor composite; aluminum composite superconducting **wire** tape

IT Tapes (material)
Wire
(superconductive, barium copper yttrium oxide, with aluminum or silver, processing and properties of)

IT 109064-29-1D, Barium copper yttrium oxide ba2cu3yo7, oxygen-deficient
(processing and properties of superconducting **wires** and tapes of aluminum or silver with)

IT 7429-90-5, Aluminum, properties **7440-22-4**, Silver, properties
(processing and properties of superconducting **wires** and tapes of barium copper yttrium oxide with)

L87 ANSWER 8 OF 13 HCA COPYRIGHT 1998 ACS

119:283551 Influences of the precursor powder on the microstructure of HTSC-tapes. Gauss, S.; Lang, C. H. (Hoechst AG, Frankfurt, 65 926, Germany). J. Electron. Mater., 22(10), 1275-8 (English) 1993. CODEN: JECMA5. ISSN: 0361-5235.

AB Tapes of Bi(Pb)-Sr-Ca-Cu-O 2212 and 2223 were fabricated by the doctor-blade process and the powder-in-tube method with silver as a matrix material. To obtain good elec. properties., the prepn. had to start from a precursor material instead of fully reacted, phase pure superconducting powder. The suitability of precalcined precursor powders prepd. by different routes was compared and microstructure in the reacted **wire** or tape was investigated. Homogeneity, phase purity, and carbon content were investigated. The precursor powder prepd. by a modified copptn. exhibited improved properties in comparison to other routes.

CC 76-4 (Electric Phenomena)
Section cross-reference(s): 78

ST precursor powder microstructure HTSC tape; high temp superconductor

tape precursor powder; bismuth calcium copper lead strontium oxide; BSCCO 2212 2223 tape **wire** precursor
IT Superconductivity
(crit. current, of bismuth calcium copper lead strontium oxide tapes and **wires**, precursor material in relation to)
IT Superconductivity
(crit. temp., of bismuth calcium copper lead strontium oxide tapes and **wires**)
IT Tapes (material)
Wire
(superconductive, bismuth calcium copper lead strontium oxide, precursor powder on microstructure of)
IT **7440-22-4**, Silver, uses
(**matrix**, in **superconductor** tapes and **wires**)
IT 116739-98-1, Bismuth calcium copper lead strontium oxide
(superconductor tapes and **wires** contg., precursor powder on microstructure of)

L87 ANSWER 9 OF 13 HCA COPYRIGHT 1998 ACS
118:203586 Multifilamentary superconducting **cable** and its manufacture. Ferrando, William A.; Divecha, Amarnath P.; Kerr, James (United States Dept. of the Navy, USA). U. S. Pat. Appl. US 914669 A0 930101, 12 pp. Avail. NTIS Order No. PAT-APPL-7-914 669. (English). CODEN: XAXXAV. APPLICATION: US 92-914669 920707.
AB A Nb-Ti or Nb-Zr low-temp. superconducting **wire** is coated with molten AgNO3, which is then decompd. to form a uniform Ag coating on the **wire**; and a uniform coating of molten Al or Al alloy is formed on the Ag-coated **wire** and solidified. A bundle of the coated **wires** is inserted into an Al or Al-alloy tube and cold worked to form a multifilamentary superconducting **cable** comprising the Ag-coated **wires** each surrounded by an Al or Al-alloy matrix.
CC 76-4 (Electric Phenomena)
ST multifilamentary superconducting **cable** manuf; niobium alloy multifilamentary superconducting **cable**; titanium niobium multifilamentary superconducting **cable**; zirconium niobium multifilamentary superconducting **cable**; silver coated niobium alloy superconducting **cable**; aluminum **matrix** niobium alloy **superconducting cable**
IT Electric **cables**
(superconductive, multifilamentary, from niobium-alloy **wires** coated with silver, in aluminum matrix)
IT Aluminum alloy, base
(multifilamentary superconducting **cables** from silver-coated niobium-alloy **wires** in matrix from)
IT 7761-88-8, Silver nitrate (AgNO3), uses
(coating with, of niobium-alloy **wires**, in manuf. of multifilamentary superconducting **cables**)
IT 11105-54-7 11105-55-8
(multifilamentary superconducting **cables** contg., with

aluminum matrix, manuf. of)
IT 7429-90-5, Aluminum, uses
(multifilamentary superconducting **cables** from
silver-coated niobium-alloy **wires** in matrix from)
IT **7440-22-4**, Silver, uses
(niobium-alloy **wires** coated with, for multifilamentary
superconducting **cables**)

L87 ANSWER 10 OF 13 HCA COPYRIGHT 1998 ACS
117:224699 Multifilamentary oxide superconducting **wire**.
Kikuchi, Hiroyuki; Mimura, Masanao; Uno, Naoki; Tanaka, Yasuzo
(Furukawa Electric Co., Ltd., Japan). Eur. Pat. Appl. EP 498420 A2
920812, 25 pp. DESIGNATED STATES: R: DE, FR, GB, IT. (English).
CODEN: EPXXDW. APPLICATION: EP 92-101986 920206. PRIORITY: JP
91-38124 910207; JP 91-38125 910207; JP 91-41072 910213.
AB The title **wire** comprises a cylindrical metal matrix with a
no. of flat oxide superconductor **filaments** arranged in it
such that the widths of the **filaments** extend radially in
the cross section of the matrix.
IC ICM H01L039-14
ICS H01L039-24
CC 76-4 (Electric Phenomena)
Section cross-reference(s): 57
ST multifilamentary oxide superconducting **wire**
IT Superconductors
(oxide, multifilamentary **wires** contg., manuf. of)
IT **Wire**
(superconductive, multifilamentary, manuf. of)
IT **7440-22-4P**, Silver, uses
(multifilamentary oxide **superconducting wires**
having **matrixes** of, manuf. of)
IT 107539-20-8P, Barium copper yttrium oxide 114901-61-0P, Bismuth
calcium copper strontium oxide 116517-51-2P, Barium calcium copper
thallium oxide 116739-98-1P, Bismuth calcium copper lead strontium
oxide
(superconductor, multifilamentary **wires** contg., manuf.
of)

L87 ANSWER 11 OF 13 HCA COPYRIGHT 1998 ACS
115:62727 Method for producing high-temperature superconductor
wires with large current-carrying capacities and their use
in manufacturing superconductor devices. Heide, Helmut;
Gruenthaler, Karl Heinz; Nielsen, Inken (Battelle-Institut e.V.,
Fed. Rep. Ger.). Ger. DE 3942823 C1 910228, 6 pp. (German).
CODEN: GWXXAW. APPLICATION: DE 89-3942823 891223.
AB A method for prepg. a ductile superconducting **wire**
comprising a superconducting phase (e.g., YBa2Cu3O7-x) in a Ag/Ag2O
matrix, by using hot isostatic pressing (HIP) and mech. forming
techniques, entails carrying out the heat treatments needed as part
of the forming of the **wire** under a high gas pressure so
that the superconducting core is dense and defect-free, with

microcrystallites which are oriented along the current-carrying directions. Use of the **wires** to form semiconductor devices (e.g., coils) entails carrying out a final HIP cycle after the **wires** have been used to form windings to produce a final consolidation.

IC ICM C04B035-50
ICS C04B035-00; B28B003-00; H01B012-00
CC 76-4 (Electric Phenomena)
Section cross-reference(s): 57
ST oxide superconductor **wire** hot isostatic pressing; coil superconductor oxide **wire**
IT Superconductor devices
(coils, manuf. and forming of oxide superconductor-based **wires** for)
IT Molding
(hot isostatic pressing, in superconductor oxide **wire** formation)
IT **Wire**
(superconductive, oxide, manuf. and forming of)
IT **7440-22-4**, Silver, uses and miscellaneous 20667-12-3, Silver oxide (Ag2O)
(**wires** based on oxide **superconductors** in **matrixes** contg., formation of)
IT 109064-29-1DP, Barium copper yttrium oxide (Ba2Cu3YO7), oxygen-deficient
(**wires** based on superconductive, formation of)

L87 ANSWER 12 OF 13 HCA COPYRIGHT 1998 ACS
112:15139 Ceramic superconductor **wire** and its manufacture.
Hayashi, Kazuhiko (Sumitomo Electric Industries, Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 01019617 A2 890123 Heisei, 4 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 88-78578 880330. PRIORITY: JP 87-77238 870330.
AB A stress-resistant superconductor **wire** comprises ceramic superconducting powders dispersed in a metal matrix. The method for manufg. the **wire** involves plastic working a metal pipe filled with a mixt. of the superconducting powders and metal powders. Specifically, the matrix comprises Cu or Al.
IC ICM H01B012-10
ICS B22F003-14; B28B001-00; C22C005-06; C22C009-00; C22C021-00; H01B013-00
CC 76-4 (Electric Phenomena)
ST ceramic **superconductor wire** metal **matrix**
IT **Wire**
(superconductive, ceramic, with metal matrixes)
IT 7439-91-0, Lanthanum, uses and miscellaneous 7439-98-7, Molybdenum, uses and miscellaneous 7440-03-1, Niobium, uses and miscellaneous **7440-22-4**, Silver, uses and miscellaneous 7440-62-2, Vanadium, uses and miscellaneous
(metal pipes, in manufg. of superconductor **wires**)
IT 7429-90-5, Aluminum, uses and miscellaneous 7440-50-8, Copper,

uses and miscellaneous
(**superconductor wires** with **matrixes**
from)
IT 114901-61-0, Bismuth calcium copper strontium oxide 123815-45-2,
Copper strontium yttrium oxide (CuSr0.2Y0.8O3)
(superconductor **wires**, with metal matrixes)

L87 ANSWER 13 OF 13 HCA COPYRIGHT 1998 ACS
83:106981 Pinning of fluxoids in a type II superconducting
lead-sodium-mercury alloy with silver particles. Das Gupta, Amit;
Mordike, Barry L.; Frommeyer, Georg (Inst. Metallphys., Univ.
Goettingen, Goettingen, Ger.). Z. Metallkd., 66(6), 319-23
(English) 1975. CODEN: ZEMTAE.
AB In a alloy system contg. Na 2.5, Hg 5.0 balance Pb and contg. 5.0
vol. % Hg particles, the flux pinning in type II
superconducting matrix phase by the normal Ag
phase was studied. In this alloy system, when an appropriate choice
of mech. deformation and annealing is made, the Ag particles can be
rendered either as thin aligned **fibers** or as coarse randon
spheroids. By changing the microstructure by annealing the
relationship between flux pinning and morphology can be studied.
CC 76-8 (Electric Phenomena)
IT **7440-22-4**, properties
(pinning of magnetic flux by particle of, in lead-sodium-mercury
superconductors)

=> d his 198-

(FILE 'HCA' ENTERED AT 21:15:47 ON 13 JUL 1998)

FILE 'INSPEC, NTIS, COMPENDEX, METADEX, EMA, CERAB' ENTERED AT
21:18:44 ON 13 JUL 1998

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L98          1706 FILE INSPEC
L99           124 FILE NTIS
L100          515 FILE COMPENDEX
L101          345 FILE METADEX
L102          660 FILE EMA
L103           51 FILE CERAB
     TOTAL FOR ALL FILES
L104         3401 S L8
L105         1260 FILE INSPEC
L106          103 FILE NTIS
L107          762 FILE COMPENDEX
L108          352 FILE METADEX
L109          104 FILE EMA
L110          101 FILE CERAB
     TOTAL FOR ALL FILES
L111         2682 S L89
L112            7 FILE INSPEC
L113            0 FILE NTIS
L114            5 FILE COMPENDEX
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L115          0 FILE METADEX
L116          3 FILE EMA
L117          0 FILE CERAB
     TOTAL FOR ALL FILES
L118         15 S L104 AND L111
L119        450 FILE INSPEC
L120         78 FILE NTIS
L121        358 FILE COMPENDEX
L122        317 FILE METADEX
L123         40 FILE EMA
L124         34 FILE CERAB
     TOTAL FOR ALL FILES
L125       1277 S L20
L126         28 FILE INSPEC
L127          6 FILE NTIS
L128         38 FILE COMPENDEX
L129          6 FILE METADEX
L130          7 FILE EMA
L131          3 FILE CERAB
     TOTAL FOR ALL FILES
L132         88 S L24
L133          0 FILE INSPEC
L134          0 FILE NTIS
L135          0 FILE COMPENDEX
L136          0 FILE METADEX
L137          0 FILE EMA
L138          0 FILE CERAB
     TOTAL FOR ALL FILES
L139          0 S L125 AND L132

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FILE COVERS 1969 TO DATE.

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L112 ANSWER 1 OF 7  INSPEC  COPYRIGHT 1998 IEE
AN   97:5581527  INSPEC     DN  A9712-7460M-011
TI   Ag-doping-induced coordination incompatibility
     and its effect on superconductivity in YBCO.
AU   Behera, D.; Mishra, N.C.; Patnaik, K. (Dept. of Phys., Utkal Univ.,
     Bhubaneswar, India)
SO   Journal of Superconductivity (Feb. 1997) vol.10, no.1, p.27-32. 28
     refs.
     Published by: Plenum
     Price: CCCC 0896-1107/97/0200-0027$12.50/0
     CODEN: JOUSEH  ISSN: 0896-1107
```

SICI: 0896-1107(199702)10:1L.27:DICI;1-3
DT Journal
TC Experimental
CY United States
LA English
AB A series of samples of YBa2Cu3-xAgxO7-y with 0<or=*<or=0.12 composition was studied to probe into the Ag substitution effect on oxygen stoichiometry, **lattice** parameters, and **superconducting** properties. With the samples prepared at a relatively lower sintering temperature, **Ag** could be **doped** in the grains rather than precipitate at grain boundaries. Thus, unlike in the case of YBCO+Ag composites or in doped systems annealed at high temperatures where Ag occupies mostly the grain boundary, the present system showed a drastic change in Tc, oxygen stoichiometry, and lattice parameters with Ag concentration, indicating the substitution of Ag at the Cu(1) sites in the grains. The stable 2-fold oxygen coordination of Ag substituting Cu(1)'s explains the observed variation of oxygen deficiency with Ag. A crystallochemical analysis has been made to reveal the crucial role of Ag-substitution-induced coordination incompatibility and charge state instability on carrier concentration and Tc.
CC A7460M Material effects on T/sub c, K, critical currents in type-II superconductors; A7470V Perovskite phase superconductors; A6480E Stoichiometry and homogeneity; A6160 Specific structure of inorganic compounds; A7410 Superconducting critical temperature, occurrence; A6170N Grain and twin boundaries
CT BARIUM COMPOUNDS; CARRIER DENSITY; GRAIN BOUNDARIES; HIGH-TEMPERATURE SUPERCONDUCTORS; LATTICE CONSTANTS; STOICHIOMETRY; SUPERCONDUCTING TRANSITION TEMPERATURE; YTTRIUM COMPOUNDS
ST YBa2Cu3-xAgxO7-y; coordination incompatibility; composition; lattice parameters; superconducting properties; sintering temperature; precipitates; annealing; grain boundary; substitution; charge state instability; carrier concentration; YBa2Cu3AgO7
CHI YBa2Cu3AgO7 ss, Ba2 ss, Cu3 ss, Ag ss, Ba ss, Cu ss, O7 ss, O ss, Y ss
ET Ag; Ag*Ba*Cu*O*Y; Ag sy 5; sy 5; Ba sy 5; Cu sy 5; O sy 5; Y sy 5; YBa2Cu3-xAgxO7-y; Y cp; cp; Ba cp; Cu cp; Ag cp; O cp; Cu; YBa2Cu3AgO7; YBa2Cu3AgO; Ba; O; Y

L112 ANSWER 2 OF 7 INSPEC COPYRIGHT 1998 IEE
AN 94:4746007 INSPEC DN A9419-7430E-012
TI Thermal conductivity of **Ag-doped** Bi-2212 superconducting materials prepared by the floating zone method.
AU Matsukawa, M.; Tatezaki, F.; Noto, K.; Fujishiro, H. (Fac. of Eng., Iwate Univ., Morioka, Japan); Michishita, K.; Kubo, Y.
SO Cryogenics (Aug. 1994) vol.34, no.8, p.685-8. 15 refs.
Price: CCCC 0011-2275/94/080685-04/$10.00
CODEN: CRYOAX ISSN: 0011-2275
DT Journal
TC Experimental

CY United Kingdom
LA English
AB The thermal conductivity kappa of **Ag-doped** Bi-2212 superconducting materials prepared by the floating zone method has been measured between 15 and 200 K. **Ag-doping** into the **superconducting matrix** yields a large enhancement of kappa over a wide range of measured temperatures, and the thermal conductivity of a 15 wt% **silver-doped** sample in the low temperature region becomes about one order of magnitude larger than that of an undoped sample. This behaviour is discussed in terms of the percolation theory. From the viewpoint of cryogenic engineering, it is found that the Ag grains operate as 'intrinsic stabilizers' in the Bi-2212 superconducting materials.
CC A7430E Thermodynamic properties; thermal conductivity; A7470V Perovskite phase superconductors; A6670 Nonelectronic thermal conduction and heat-pulse propagation in nonmetallic solids
CT BISMUTH COMPOUNDS; CALCIUM COMPOUNDS; HIGH-TEMPERATURE SUPERCONDUCTORS; PERCOLATION; SILVER; STRONTIUM COMPOUNDS; THERMAL CONDUCTIVITY OF SOLIDS
ST thermal conductivity; **Ag-doped Bi-2212 superconducting materials**; floating zone method; low temperature region; percolation theory; cryogenic engineering; intrinsic stabilizers; Bi-Sr-Ca-Cu-O; 15 to 200 K; BiSrCaCuO:Ag
CHI BiSrCaCuO:Ag ss, BiSrCaCuO ss, Ag ss, Bi ss, Ca ss, Cu ss, Sr ss, O ss, Ag el, Ag dop
PHP temperature 1.5E+01 to 2.0E+02 K
ET Ag; Bi; Bi*Ca*Cu*O*Sr; Bi sy 5; sy 5; Ca sy 5; Cu sy 5; O sy 5; Sr sy 5; Bi-Sr-Ca-Cu-O; Ag*Bi*Ca*Cu*O*Sr; Ag sy 6; sy 6; Bi sy 6; Ca sy 6; Cu sy 6; O sy 6; Sr sy 6; BiSrCaCuO:Ag; Ag doping; doped materials; Bi cp; cp; Sr cp; Ca cp; Cu cp; O cp; BiSrCaCuO; Ca; Cu; Sr; O

L112 ANSWER 3 OF 7 INSPEC
AN 94:4723956 INSPEC DN A9418-7460J-009
TI Microstructure and transport property in **silver doped** BiPbSrCaCuO(2223)/**Ag** superconducting composites.
AU Guo, Y.C.; Liu, H.K.; Dou, S.X. (Sch. of Mater. Sci. & Eng., New South Wales Univ., NSW, Australia)
SO Physica B (Feb. 1994) vol.194-196, p.2283-4. 5 refs.
Price: CCCC 0921-4526/94/$07.00
CODEN: PHYBE3 ISSN: 0921-4526
Conference: 20th International Conference on Low-Temperature Physics LT-20. Eugene, OR, USA, 4-11 Aug 1993
Sponsor(s): IUPAP; American Phys. Soc
DT Conference Article; Journal
TC Experimental
CY Netherlands
LA English
AB Silver-sheathed (Bi,Pb)2Sr2Ca2Cu3O10 composite tapes have been

doped with varying **silver** levels and their microstructures, and transport properties have been investigated. X-ray diffraction and resistivity measurements indicate that the **silver doping** causes neither change in the value of Tc not decomposition of high-Tc phase. However, the electrical measurements show that the silver does influence the critical current density (Jc), which decreases with increasing **silver dopant** content when tapes are annealed with same temperature. The microstructural analyses reveal that silver exists as an isolated phase inside the tape without visible reaction and diffusion with **superconductor matrix**, but the undesirable morphology of **doped silver** particles cause a degradation of grain alignment.

CC A7460J Critical currents; A7470V Perovskite phase superconductors; A7470Y Other superconducting materials; A7470J Superconducting layer structures and intercalation compounds; A7410 Occurrence, critical temperature; A7460M Material effects on T/sub c, K, critical currents; A6480G Microstructure; A7470M Amorphous, highly disordered, and granular superconductors

CT ANNEALING; BISMUTH COMPOUNDS; CALCIUM COMPOUNDS; COMPOSITE SUPERCONDUCTORS; CRITICAL CURRENT DENSITY (SUPERCONDUCTIVITY); CRYSTAL MICROSTRUCTURE; GRANULAR MATERIALS; HIGH-TEMPERATURE SUPERCONDUCTORS; LEAD COMPOUNDS; PARTICLE SIZE; SILVER; STRONTIUM COMPOUNDS; SUPERCONDUCTING TRANSITION TEMPERATURE; X-RAY DIFFRACTION EXAMINATION OF MATERIALS

ST high temperature superconductors; critical temperature Ag-sheathed composite tapes; Ag particles; **Ag doping**; XRD; annealing; SEM; superconducting composites; microstructures; transport properties; X-ray diffraction; resistivity; critical current density; **superconductor matrix**; morphology; grain alignment; (BiPb)2Sr2Ca2Cu3O10:Ag-Ag

CHI BiPbSr2Ca2Cu3O10:Ag-Ag int, BiPbSr2Ca2Cu3O10:Ag int, BiPbSr2Ca2Cu3O10 int, Ca2 int, Cu3 int, O10 int, Sr2 int, Ag int, Bi int, Ca int, Cu int, Pb int, Sr int, O int, BiPbSr2Ca2Cu3O10:Ag ss, BiPbSr2Ca2Cu3O10 ss, Ca2 ss, Cu3 ss, O10 ss, Sr2 ss, Ag ss, Bi ss, Ca ss, Cu ss, Pb ss, Sr ss, O ss, Ag el, Ag dop

ET Bi*Ca*Cu*O*Pb*Sr; Bi sy 6; sy 6; Ca sy 6; Cu sy 6; O sy 6; Pb sy 6; Sr sy 6; BiPbSrCaCuO; Bi cp; cp; Pb cp; Sr cp; Ca cp; Cu cp; O cp; Bi; Pb; Ca*Cu*O*Sr; Ca sy 4; sy 4; Cu sy 4; O sy 4; Sr sy 4; Sr2Ca2Cu3O10; Ag; Ag*Bi*Ca*Cu*O*Pb*Sr; Ag sy 7; sy 7; Bi sy 7; Ca sy 7; Cu sy 7; O sy 7; Pb sy 7; Sr sy 7; (BiPb)2Sr2Ca2Cu3O10:Ag; Ag doping; doped materials; (BiPb)2Sr2Ca2Cu3O10:Ag-Ag; BiPbSr2Ca2Cu3O; Ag-Ag; Ca; Cu; O; Sr

L112 ANSWER 4 OF 7 INSPEC COPYRIGHT 1998 IEE
AN 93:4516595 INSPEC DN A9324-7460M-006
TI **Silver-doped** (Bi,Pb)2Sr2Ca2Cu3O10/Ag high-temperature superconducting composites.
AU Guo, Y.C.; Liu, H.K.; Dou, S.X. (Sch. of Mater. Sci. & Eng., New South Wales Univ., Kensington, NSW, Australia)
SO Physica C (1 Oct. 1993) vol.215, no.3-4, p.291-6. 17 refs.

Price: CCCC 0921-4534/93/$06.00
CODEN: PHYCE6 ISSN: 0921-4534

DT Journal
TC Experimental
CY Netherlands
LA English
AB The effect of **silver doping** on the microstructure and transport properties of Ag-sheathed (Bi,Pb)2Sr2Ca2Cu3AgxO10 composite tapes has been investigated through scanning electron microscope (SEM) observation and electrical measurements including critical temperature (Tc), critical current density (Jc) and Jc behaviour in magnetic field for a series of samples with varying dopant levels (x=0.0-3.5). The results show that **silver doping** has no noticeable effect on the Tc of the samples, but influences the sample's Jc which decreases with increasing **silver doping** content when the samples are sintered at the same temperature. A slight improvement of Jc behaviour in magnetic field is observed for the lightly doped samples, while higher-level doping shows a small degradation in the Jc behaviour. Microstructural analyses reveal that silver exists as an isolated phase inside the tapes without visible reaction with and diffusion within the **superconductor matrix**, so has no influence on Tc. But the undesirable shape and size of the silver particles cause grain misorientation, and hence lead to a decrease in Jc. The influence of **silver doping** on the Jc behaviour in magnetic field is a combined effect of grain alignment, grain conductivity and flux pinning.
CC A7460M Material effects on T/sub c, K, critical currents; A7470V Perovskite phase superconductors; A6170W Impurity concentration, distribution, and gradients; A7410 Occurrence, critical temperature; A7460J Critical currents; A6170N Grain and twin boundaries; A7460G Flux pinning, flux motion, fluxon-defect interactions; A7470J Superconducting layer structures and intercalation compounds
CT BISMUTH COMPOUNDS; CALCIUM COMPOUNDS; COMPOSITE SUPERCONDUCTORS; CRITICAL CURRENT DENSITY (SUPERCONDUCTIVITY); DOPING PROFILES; FLUX PINNING; GRAIN BOUNDARIES; HIGH-TEMPERATURE SUPERCONDUCTORS; LEAD COMPOUNDS; SCANNING ELECTRON MICROSCOPE EXAMINATION OF MATERIALS; SILVER; STRONTIUM COMPOUNDS; SUPERCONDUCTING TRANSITION TEMPERATURE
ST (Bi,Pb)2Sr2Ca2Cu3O10/Ag high-temperature superconducting composites; **silver doping**; microstructure; transport properties; scanning electron microscope; electrical measurements; critical temperature; critical current density; sintered; magnetic field; grain alignment; grain conductivity; flux pinning; (BiPb)2Sr2Ca2Cu3O10-Ag
CHI BiPbSr2Ca2Cu3O10-Ag int, BiPbSr2Ca2Cu3O10 int, Ca2 int, Cu3 int, O10 int, Sr2 int, Ag int, Bi int, Ca int, Cu int, Pb int, Sr int, O int, BiPbSr2Ca2Cu3O10 ss, Ca2 ss, Cu3 ss, O10 ss, Sr2 ss, Bi ss, Ca ss, Cu ss, Pb ss, Sr ss, O ss, Ag el
ET Bi; Pb; Ca*Cu*O*Sr; Ca sy 4; sy 4; Cu sy 4; O sy 4; Sr sy 4; Sr2Ca2Cu3O10; Sr cp; cp; Ca cp; Cu cp; O cp; Ag; Ag*Ca*Cu*O*Sr; Ag

sy 5; sy 5; Ca sy 5; Cu sy 5; O sy 5; Sr sy 5; Sr2Ca2Cu3AgxO10; Ag cp; Ag*Bi*Ca*Cu*O*Pb*Sr; Ag sy 7; sy 7; Bi sy 7; Ca sy 7; Cu sy 7; O sy 7; Pb sy 7; Sr sy 7; (BiPb)2Sr2Ca2Cu3O10; Bi cp; Pb cp; (BiPb)2Sr2Ca2Cu3O10-Ag; Bi*Ca*Cu*O*Pb*Sr; Bi sy 6; sy 6; Ca sy 6; Cu sy 6; O sy 6; Pb sy 6; Sr sy 6; BiPbSr2Ca2Cu3O; Ca; Cu; O; Sr

L112 ANSWER 5 OF 7 INSPEC COPYRIGHT 1998 IEE
AN 91:3946406 INSPEC DN A91110150
TI Effects of **Ag**/Ag2O **doping** on the superconductivity of the Bi1.84Pb0.34Sr1.91Ca2.03Cu3.06Oy oxide.
AU Chan Joong Kim; Myoung Seoup Hahn; Dong Soo Suhr; Ki Baik Kim; Ho Jin Lee; Hee Gyoun Lee; Gye Won Hong; Dong Yeon Won (Korea Atomic Energy Res. Inst., Daejun, South Korea)
SO Materials Letters (May 1991) vol.11, no.3-4, p.79-84. 16 refs.
Price: CCCC 0167-577X/91/$03.50
CODEN: MLETDJ ISSN: 0167-577X
DT Journal
TC Experimental
CY Netherlands
LA English
AB Effects of sintering atmosphere on the formation of the 2-2-2-3 phase in the **Ag-doped** and the Ag2O-doped PbBiSrCaCuO systems were investigated in three different atmospheres (pure oxygen, air and O2/Ar= 1/13). The formation of the 2-2-2-3 phase is enhanced with increasing sintering time in air and under low oxygen partial pressure, but suppressed in pure oxygen. Tc also increases with increasing sintering time, irrespective of the type of doping element and independent of their content up to 20 wt.% Ag and 21.17 wt.% Ag2O. A considerable interaction among superconducting phases and the Ag or Ag2O is not observed in all the atmospheres. The **doped Ag** is present as an isolated particle in the **superconducting matrix**, whereas the doped Ag2O is reduced to Ag metal phase and is also present as an isolated particle in the matrix.
CC A7410 Occurrence, critical temperature; A7460M Material effects on T/sub c, K, critical currents; A7470V Perovskite phase superconductors; A8120L Ceramics and refractories; A8120E Powder techniques, compaction and sintering
CT BISMUTH COMPOUNDS; CALCIUM COMPOUNDS; CERAMICS; HIGH-TEMPERATURE SUPERCONDUCTORS; LEAD COMPOUNDS; SILVER; SILVER COMPOUNDS; SINTERING; STRONTIUM COMPOUNDS; SUPERCONDUCTING TRANSITION TEMPERATURE
ST high temperature superconductor; critical temperature; doping; superconductivity; sintering; 2-2-2-3 phase; Bi1.84Pb0.34Sr1.91Ca2.03Cu3.06Oy:Ag; Bi1.84Pb0.34Sr1.91Ca2.03Cu3.06O y:Ag2O
CHI Bi1.84Pb0.34Sr1.91Ca2.03Cu3.06O:Ag ss, Bi1.84Pb0.34Sr1.91Ca2.03Cu3.06O ss, Bi1.84 ss, Ca2.03 ss, Cu3.06 ss, Pb0.34 ss, Sr1.91 ss, Ag ss, Bi ss, Ca ss, Cu ss, Pb ss, Sr ss, O ss, Ag el, Ag dop; Bi1.84Pb0.34Sr1.91Ca2.03Cu3.06O:Ag2O ss, Bi1.84Pb0.34Sr1.91Ca2.03Cu3.06O ss, Bi1.84 ss, Ca2.03 ss, Cu3.06 ss,

PbO.34 ss, Sr1.91 ss, Ag2 ss, Ag ss, Bi ss, Ca ss, Cu ss, Pb ss, Sr ss, O ss, Ag2O bin, Ag2 bin, Ag bin, O bin, Ag2O dop, Ag2 dop, Ag dop, O dop

ET Ag; Ag*O; Ag2O; Ag cp; cp; O cp; Bi*Ca*Cu*O*Pb*Sr; Bi sy 6; sy 6; Ca sy 6; Cu sy 6; O sy 6; Pb sy 6; Sr sy 6; Bi1.84Pb0.34Sr1.91Ca2.03Cu3.06Oy; Bi cp; Pb cp; Sr cp; Ca cp; Cu cp; PbBiSrCaCuO; O2; Ag*Bi*Ca*Cu*O*Pb*Sr; Ag sy 7; sy 7; Bi sy 7; Ca sy 7; Cu sy 7; O sy 7; Pb sy 7; Sr sy 7; Bi1.84Pb0.34Sr1.91Ca2.03Cu3.06 Oy:Ag; Ag doping; doped materials; Bi1.84Pb0.34Sr1.91Ca2.03Cu3.06Oy: Ag2O; Ag2O doping; Bi1.84Pb0.34Sr1.91Ca2.03Cu3.06O:Ag; Bi1.84Pb0.34Sr1.91Ca2.03Cu3.06O; Bi; Ca; Cu; Pb; Sr; O; Bi1.84Pb0.34Sr1.91Ca2.03Cu3.06O:Ag2O

L112 ANSWER 6 OF 7 INSPEC COPYRIGHT 1998 IEE

AN 90:3569881 INSPEC DN A90041077

TI Contact resistance of **silver-doped** Y-Ba-Cu-O in a magnetic field.

AU Jin, S.; Graebner, J.E.; Tiefel, T.H.; Kammlott, G.W. (AT&T Bell Lab., Murray Hill, NJ, USA)

SO Applied Physics Letters (8 Jan. 1990) vol.56, no.2, p.186-8. 13 refs.
Price: CCCC 0003-6951/90/020186-03$02.00
CODEN: APPLAB ISSN: 0003-6951

DT Journal

TC Experimental

CY United States

LA English

AB The apparent contact resistance at the Ag-particle/superconductor interface in sintered YBa2Cu3O7- delta is found to increase considerably in applied magnetic fields (e.g. by approximately 300% at H=200 G, at 77 K). However, in a melt-textured sample where the Ag particles are dispersed within the high Jc grain, no noticeable field dependence of rho c is obtained for H up to 1 T. The field dependence of apparent rho c in fine-grained material is, therefore, attributed mostly to the local current concentration in the superconductor near the Ag particles. It causes Jc to be locally exceeded, with the voltage drop contributing to the apparent rho c value even though the average current density in the **superconductor matrix** is well below the Jc value.
The importance of avoiding local current concentration by proper design and processing of silver contacts, and minimizing low Jc (H) region near the interface, is pointed out.

CC A7460J Critical currents; A7470V Perovskite phase superconductors

CT BARIUM COMPOUNDS; CONTACT RESISTANCE; CRITICAL CURRENT DENSITY (SUPERCONDUCTIVITY); HIGH-TEMPERATURE SUPERCONDUCTORS; SILVER; YTTRIUM COMPOUNDS

ST high temperature superconductors; critical current density; apparent contact resistance; Ag-particle/superconductor interface; sintered; applied magnetic fields; melt-textured sample; fine-grained material; local current concentration; current density; 77 K; 200 G; YBa2Cu3O7- delta -Ag

CHI YBa2Cu3O-Ag int, YBa2Cu3O int, Ba2 int, Cu3 int, Ag int, Ba int, Cu int, O int, Y int, YBa2Cu3O ss, Ba2 ss, Cu3 ss, Ba ss, Cu ss, O ss, Y ss, Ag el
PHP temperature 7.7E+01 K; magnetic flux density 2.0E-02 T
ET Ba*Cu*O*Y; Ba sy 4; sy 4; Cu sy 4; O sy 4; Y sy 4; Y-Ba-Cu-O; Ag; YBa2Cu3O7- delta ; Y cp; cp; Ba cp; Cu cp; O cp; H; Ag*Ba*Cu*O*Y; Ag sy 5; sy 5; Ba sy 5; Cu sy 5; O sy 5; Y sy 5; YBa2Cu3O7- delta -Ag; YBa2Cu3O; YBa2Cu3O-Ag; Ba; Cu; O; Y

L112 ANSWER 7 OF 7 INSPEC COPYRIGHT 1998 IEE
AN 80:1434472 INSPEC DN A80002534
TI Flux pinning on normal silver particles embedded in **superconducting** PbIn **matrix.**
AU Trojnar, E.; Zaleski, A.J. (Inst. of Low Temperature & Structure Res., Polish Acad. of Sci., Wroclaw, Poland)
SO Acta Physica Polonica A (Sept. 1979) vol.A56, no.3, p.405-9. 5 refs.
CODEN: ATPLB6 ISSN: 0587-4246
DT Journal
TC Theoretical; Experimental
CY Poland
LA English
AB Magnetisation measurements were done at 4.2K on Pb-23 at.% In and on the same alloy **doped** with **silver** particles. The resulting data for the pinning force density and its comparison with known theoretical models are presented.
CC A7460G Flux pinning, flux motion, fluxon-defect interactions; A7470 Superconducting materials
CT FLUX PINNING; GINZBURG-LANDAU THEORY; INDIUM ALLOYS; LEAD ALLOYS; SILVER; TYPE II SUPERCONDUCTORS
ST **superconducting PbIn matrix**; pinning force density; Ag particles; flux pinning; magnetisation measurements; type II superconductors
ET In*Pb; In sy 2; sy 2; Pb sy 2; PbIn; Pb cp; cp; In cp; K; Pb; In; Ag

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FILE COVERS 1970 TO DATE.

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L114 ANSWER 1 OF 5 COMPENDEX COPYRIGHT 1998 EI
AN 97(29):1697 COMPENDEX
TI **Ag-doping**-induced coordination incompatibility and its effect on superconductivity in YBCO.
AU Behera, D. (Utkal Univ, Bhubaneswar, India); Mishra, N.C.; Patnaik, K.
SO Journal of Superconductivity v 10 n 1 Feb 1997.p 27-32
CODEN: JOUSEH ISSN: 0896-1107

PY 1997
DT Journal
TC Experimental
LA English
AB A series of samples of YBa2Cu3 minus xAgxO7 minus y with 0 less than equivalent to x less than equivalent to 0.12 composition was studied to probe into the Ag substitution effect on oxygen stoichiometry, **lattice** parameters, and **superconducting** properties.With the samples prepared at a relatively lower sintering temperature, **Ag** could be **doped** in the grains rather than precipitate at grain boundaries.Thus, unlike in the case of YBCO plus Ag composites or in doped systems annealed at high temperatures where Ag occupies mostly the grain boundary, the present system showed a drastic change in Tc, oxygen stoichiometry, and lattice parameters with Ag concentration, indicating the substitution of Ag at the Cu(1) sites in the grains. The stable 2-fold oxygen coordination of Ag substituting Cu(1)'s explains the observed variation of oxygen deficiency with Ag.A crystallochemical analysis has been made to reveal the crucial role of Ag-substitution-induced coordination incompatibility and charge state instability on carrier concentration and Tc.(Author abstract) 28 Refs.
CC 708.3.1 High Temperature Superconducting Materials; 802.2 Chemical Reactions; 801 Chemistry; 801.4 Physical Chemistry; 933.1.1 Crystal Lattice; 802.3 Chemical Operations
CT *Oxide superconductors; Superconducting transition temperature; Stoichiometry; Lattice constants; Sintering; Gold; Grain boundaries; Carrier concentration; Substitution reactions; Composition effects
ST Coordination incompatibility; Crystallochemical analysis; Oxygen stoichiometry
ET Ba*Cu*Y; Ba sy 3; sy 3; Cu sy 3; Y sy 3; YBa2Cu3 ; Y cp; cp; Ba cp; Cu cp; Ag*O; AgxO7 ; Ag cp; O cp; Ag; Cu

L114 ANSWER 2 OF 5 COMPENDEX
AN 94(52):2265 COMPENDEX
TI Thermal conductivity of **Ag-doped** Bi-2212 superconducting materials prepared by the floating zone method.
AU Matsukawa, M. (Iwate Univ, Morioka, Jpn); Tatezaki, F.; Noto, K.; Fujishiro, H.; Michishita, K.; Kubo, Y.
SO Cryogenics v 34 n 8 Aug 1994.p 685-688
CODEN: CRYOAX ISSN: 0011-2275
PY 1994
DT Journal
TC Experimental
LA English
AB The thermal conductivity kappa of **Ag-doped** Bi-2212 superconducting materials prepared by the floating zone method has been measured between 15 and 200 K. **Ag-doping** into the **superconducting matrix** yields a large enhancement of kappa over a wide range of measured temperatures, and the thermal conductivity of a 15 wt%

silver-doped sample in the low temperature region becomes about one order of magnitude larger than that of an undoped sample.This behaviour is discussed in terms of the percolation theory.From the viewpoint of cryogenic engineering, it is found that the Ag grains operate as 'intrinsic stabilizers' in the Bi-2212 superconducting materials. (Author abstract) 15 Refs.

CC 708.3.1 High Temperature Superconducting Materials; 931.2 Physical Properties of Gases, Liquids and Solids; 801.4 Physical Chemistry; 547.1 Precious Metals; 944.6 Temperature Measurements; 644.4 Cryogenics

CT *High temperature superconductors; Crystal microstructure; Doping (additives); Silver; Percolation (solid state); Superconductivity; Thermal variables measurement; Sintering; Bismuth compounds; Thermal conductivity of solids

ST Floating zone method; **Silver doping**; Thermal conductivity measurement

ET Ag; Bi

L114 ANSWER 3 OF 5 COMPENDEX COPYRIGHT 1998 EI

AN 94(28):1856 COMPENDEX

TI Microstructure and transport property in **silver doped** BiPbSrCaCuO(2223)/**Ag** superconducting composites.

AU Guo, Y.C. (Univ of New South Wales, Kensington, Aust); Liu, H.K.; Dou, S.X.

MT Proceedings of the 20th International Conference on Low Temperature Physics.

MO The International Union of Pure and Applied Physics; The American Physical Society

ML Eugene, OR, USA

MD 04 Aug 1993-11 Aug 1993

SO Physica B: Condensed Matter v 194-96 pt 2 Feb 2 1994.p 2283-2284 CODEN: PHYBE3 ISSN: 0921-4526

PY 1994

MN 20297

DT Journal

TC Experimental

LA English

AB Silver-sheathed (Bi,Pb)2Sr2Ca2Cu3O10 composite tapes have been **doped** with varying **silver** levels and their microstructures and transport properties have been investigated. X-ray diffraction and resistivity measurements indicate that the **silver doping** causes neither change in the value of Tc nor decomposition of high-Tc phase.However, the electrical measurements show that the silver does influence the critical current density (Jc), which decreases with increasing **silver dopant** content when tapes are annealed with same temperature.The microstructural analyses reveal that silver exists as an isolated phase inside the tape without visible reaction and diffusion with **superconductor matrix**, but the undesirable morphology of **doped silver** particles

cause a degradation of grain alignment.(Author abstract) 5 Refs.

CC 708.3.1 High Temperature Superconducting Materials; 547.1 Precious Metals; 801.4 Physical Chemistry; 931.2 Physical Properties of Gases, Liquids and Solids; 942.2 Electric Variables Measurements; 537.1 Heat Treatment Processes

CT *High temperature superconductors; Annealing; Transport properties; Electric conductivity measurement; X ray analysis; Doping (additives); Decomposition; Bismuth compounds; Silver; Microstructure

ST Superconducting composites; Composite tape; Critical current density; X ray diffraction; Microstructural analyses; **Superconductor matrix**; Grain alignment; Critical temperature

ET Bi; Pb; Ca*Cu*O*Sr; Ca sy 4; sy 4; Cu sy 4; O sy 4; Sr sy 4; Sr2Ca2Cu3O10; Sr cp; cp; Ca cp; Cu cp; O cp; Bi*Ca*Cu*O*Pb*Sr; Bi sy 6; sy 6; Ca sy 6; Cu sy 6; O sy 6; Pb sy 6; Sr sy 6; BiPbSrCaCuO; Bi cp; Pb cp

L114 ANSWER 4 OF 5 COMPENDEX COPYRIGHT 1998 EI

AN 94(2):1181 COMPENDEX

TI **Silver-doped** (Bi,Pb)2Sr2Ca3Cu3O10/Ag high-temperature superconducting composites.

AU Guo, Y.C. (Univ of New South Wales, Kensington, Aust); Liu, H.K.; Dou, S.X.

SO Physica C: Superconductivity v 215 n 3-4 Oct 1 1993.p 291-296
CODEN: PHYCE6 ISSN: 0921-4534

PY 1993

DT Journal

TC Application; Experimental

LA English

AB The effect of **silver doping** on the microstructure and transport properties of Ag-sheathed (Bi,Pb)2Sr2Ca2Cu3AgxO10 composite tapes has been investigated through scanning electron microscope (SEM) observation and electrical measurements including critical temperature (Tc), critical current density (Jc) and Jc behaviour in magnetic field for a series of samples with varying dopant levels (x equals 0.0-3.5).The results show that **silver doping** has no noticeable effect on the Tc of the samples, but influences the sample's Jc, which decreases with increasing **silver doping** content when the samples are sintered at the same temperature.A slight improvement of Jc behaviour in magnetic field is observed for the lightly doped samples, while higher-level doping shows a small degradation in the Jc behaviour. Microstructural analyses reveal that silver exists as an isolated phase inside the tapes without visible reaction with and diffusion within the **superconductor matrix**, so has no influence on Tc.But the undesirable shape and size of the silver particles cause grain misorientation, and hence lead to a decrease in Jc.The influence of **silver doping** on the Jc behaviour in magnetic field is a combined effect of grain alignment, grain

conductivity and flux pinning.(Author abstract) Refs.

CC 708.3.1 High Temperature Superconducting Materials; 704.2 Electric Equipment; 804.2 Inorganic Components; 547.1 Precious Metals; 813.2 Coating Materials; 701.1 Electricity: Basic Concepts and Phenomena

CT *High temperature superconductors; Electric currents; Lead compounds; Copper oxides; Silver; Cable sheathing; Doping (additives); Superconducting transition temperature; Superconducting cables; Bismuth compounds

ST Silver sheathed (bismuth, lead) strontium calcium copper oxides; Superconducting composite tapes; Critical current density; Flux pinning; Dopant levels; Grain misorientation; Grain conductivity; Grain alignment

ET Ag; Bi; Pb; Ag*Ca*Cu*O*Sr; Ag sy 5; sy 5; Ca sy 5; Cu sy 5; O sy 5; Sr sy 5; Sr2Ca2Cu3AgxO10; Sr cp; cp; Ca cp; Cu cp; Ag cp; O cp; Ca*Cu*O*Sr; Ca sy 4; sy 4; Cu sy 4; O sy 4; Sr sy 4; Sr2Ca3Cu3O10

L114 ANSWER 5 OF 5 COMPENDEX COPYRIGHT 1998 EI

AN 91(10):118483 COMPENDEX DN 9110128837

TI Effects of **Ag**/Ag2O **doping** on the superconductivity of the Bi1.84Pb0.34Sr1.91Ca2.03Cu3.06Oy oxide.

AU Kim, Chan Joong (Korea Atomic Energy Research Inst, Daejun, Korea); Hahn, Myoung Seoup; Suhr, Dong Soo; Kim, Ki Baik; Lee, Ho Jin; Lee, Hee Gyoun; Hong, Gye Won; Won, Dong Yeon

SO Mater Lett v 11 n 3-4 May 1991 p 79-84
CODEN: MLETDJ ISSN: 0167-577X

PY 1991

DT Journal

TC Experimental

LA English

AB Effects of sintering atmosphere on the formation of the 2-2-2-3 phase in the **Ag-doped** and the Ag2O-doped PbBiSrCaCuO systems were investigated in three different atmospheres (pure oxygen, air and O2/Ar equals 1/13).The formation of the 2-2-2-3 phase is enhanced with increasing sintering time in air and under low oxygen partial pressure, but suppressed in pure oxygen.Tc also increases with increasing sintering time, irrespective of the type of doping element and independent of their content up to 20 wt% Ag and 21.17 wt% Ag2O.A considerable interaction among superconducting phases and the Ag or Ag2O is not observed in all the atmospheres.The **doped Ag** is present as an isolated particle in the **superconducting matrix**, whereas the doped Ag2O is reduced to Ag metal phase and is also present as an isolated particle in the matrix.(Author abstract) 16 Refs.

CC 708 Electric & Magnetic Materials; 701 Electricity & Magnetism; 804 Chemical Products; 812 Ceramics & Refractories; 644 Refrigeration & Cryogenics; 549 Nonferrous Metals & Alloys

CT *SUPERCONDUCTING MATERIALS:Doping; BISMUTH COMPOUNDS:Superconductivity; OXIDES:Sintering; CERAMIC MATERIALS:Superconductivity; HIGH TEMPERATURE SUPERCONDUCTORS:Superconductivity

ST SUPERCONDUCTING TRANSITION TEMPERATURE; **SILVER DOPING**; LOW TEMPERATURE PROPERTIES; BISMUTH LEAD STRONTIUM CALCIUM COPPER OXIDES; SINTERING ATMOSPHERE; OXIDE SUPERCONDUCTORS
ET Ag; Ag*O; Ag2O; Ag cp; cp; O cp; Bi*Ca*Cu*O*Pb*Sr; Bi sy 6; sy 6; Ca sy 6; Cu sy 6; O sy 6; Pb sy 6; Sr sy 6; PbBiSrCaCuO; Pb cp; Bi cp; Sr cp; Ca cp; Cu cp; O2; Bi1.84Pb0.34Sr1.91Ca2.03Cu3.06Oy

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L116 ANSWER 1 OF 3 EMA COPYRIGHT 1998 CSA
AN 91(9):F2-C-1823 EMA
TI Effects of **Ag**/Ag2 O **Doping** on the Superconductivity of the Bi1.84Pb0.34Sr1.91Ca2.03Cu3.06 O y Oxide.
AU Kim, C. J.; Hahn, M. S.; Suhr, D. S.; Kim, K. B.; Lee, H. J.; Lee, H. G.; Hong, G. W.; Won, D. Y.
CS Korea Atomic Energy Research Institute; Choongnam National University
SO Materials Letters (May 1991) 11, (3-4) p. 79-84
ISSN: 0167-577X
DT Journal
LA English
AB Effects of sintering atmosphere on the formation of the 2-2-2-3 phase in the **Ag-doped** and the Ag2 O-doped PbBiSrCaCuO systems were investigated in three different atmospheres (pure oxygen, air, and O2 /Ar = 1/13). The formation of the 2-2-2-3 phase is enhanced with increasing sintering time in air and under low O partial pressure, but suppressed in pure O. T c also increases with increasing sintering time irrespective of the type of doping element and independent of their content up to 20 wt.% Ag and 21.17 wt.% Ag2 O. A considerable interaction among superconducting phases and the Ag or Ag2 O is not observed in all the atmospheres. The **doped Ag** is present as an isolated particle in the **superconducting matrix** , whereas the doped Ag2 O is reduced to Ag metal phase and is also present as an isolated particle in the matrix. Diffraction patterns, Graphs, Photomicrographs. 16 ref.
CC C Ceramics; F2 Surface Finishing; C-F2
CT Bismuth compounds: Superconductivity; Lead compounds: Superconductivity; Strontium compounds: Superconductivity; Calcium compounds: Superconductivity; Copper compounds: Superconductivity; Oxides: Superconductivity; Superconductors: Superconductivity; Silver: Additives; Silver compounds: Additives; Oxygen: Environment; Air: Environment; Inert atmospheres; Isolation; Transition temperature (superconductivity): Composition effects

ET Ag; Ag*O; Ag2 O; Ag cp; cp; O cp; Bi*Ca*Cu*O*Pb*Sr; Bi sy 6; sy 6; Ca sy 6; Cu sy 6; O sy 6; Pb sy 6; Sr sy 6; Bi1.84Pb0.34Sr1.91Ca2.03Cu3.06 O; Bi cp; Pb cp; Sr cp; Ca cp; Cu cp; Ag; Ag*O; Ag2 O; Ag cp; cp; O cp; Bi*Ca*Cu*O*Pb*Sr; Bi sy 6; sy 6; Ca sy 6; Cu sy 6; O sy 6; Pb sy 6; Sr sy 6; PbBiSrCaCuO; Pb cp; Bi cp; Sr cp; Ca cp; Cu cp; Ar*O; O2 /Ar; Ar cp; O; T

L116 ANSWER 2 OF 3 EMA
AN 90(3):F2-C-676 EMA
TI Critical Current Characteristics of BiPbSrCaCuO Compounds With Silver Oxide Addition.
AU Lee, H. K.; Lee, K. W.
CS Korea Standards Research Institute
SO Solid State Commun. (Nov 1989) 72, (7) p. 701-703
ISSN: 0038-1098
DT Journal
LA English
AB The effect of AgO addition up to 40 wt.% on superconductivity and critical current has been investigated on the system with nominal composition Bi1.8Pb0.4Sr2Ca2Cu3 O x . The composites exhibit low normal state resistivity and improved critical current density, J c , > 800 A cm exp 2 at 77K without reducing the zero resistance temperature. The decrease of J c with small magnetic field was inhibited by the silver oxide addition. 11 ref.
CC C Ceramics; F2 Surface Finishing; C-F2
CT Bismuth compounds: Superconductivity; Lead compounds: Superconductivity; Strontium: Superconductivity; Calcium compounds: Superconductivity; Copper compounds: Superconductivity; Oxides: Superconductivity; **Silver** compounds: **Dopants**; Ceramic **matrix** composites: **Superconductivity**; Critical current (superconductivity)
ET Bi*Ca*Cu*O*Pb*Sr; Bi sy 6; sy 6; Ca sy 6; Cu sy 6; O sy 6; Pb sy 6; Sr sy 6; BiPbSrCaCuO; Bi cp; cp; Pb cp; Sr cp; Ca cp; Cu cp; O cp; Ag*O; Ag sy 2; sy 2; O sy 2; AgO; Ag cp; cp; O cp; Bi*Ca*Cu*O*Pb*Sr; Bi sy 6; sy 6; Ca sy 6; Cu sy 6; O sy 6; Pb sy 6; Sr sy 6; Bi1.8Pb0.4Sr2Ca2Cu3 O; Bi cp; Pb cp; Sr cp; Ca cp; Cu cp; J; K

L116 ANSWER 3 OF 3 EMA
AN 90(3):F2-C-492 EMA
TI Contact Resistance of **Silver-Doped** YBaCuO in a Magnetic Field.
AU Jin, S.; Graebner, J. E.; Tiefel, T. H.; Kammlott, G. W.
CS AT&T Bell Laboratories
SO Appl. Phys. Lett. (8 Jan 1990) 56, (2) p. 186-188
ISSN: 0003-6951
DT Journal
LA English
AB The apparent contact resistance at the Ag-particle/superconductor interface in sintered YBa2Cu3O7 delta is found to increase considerably in applied magnetic fields (e.g., by approx 300% at H

= 200 G, at 77K). However, in a melt-textured sample where the Ag particles are dispersed within the high J c grain, no noticeable field dependence of rho c is obtained for H up to 1 T. The field dependence of apparent rho c in fine-grained material is, therefore, attributed mostly to the local current concentration in the superconductor near the Ag particles. It causes J c to be locally exceeded, with the voltage drop contributing to the apparent rho c value even though the average current density in the **superconductor matrix** is well below the J c value. The importance of avoiding local current concentration by proper design and processing of Ag contacts, and minimizing low J c (H) region near the interface, is pointed out. , . 13 ref.

CC C Ceramics; F2 Surface Finishing; C-F2

CT Oxides: Electrical properties; Yttrium compounds: Electrical properties; Barium compounds: Electrical properties; Copper compounds: Electrical properties; Superconductors: Electrical properties; Silver: Fillers; Critical current (superconductivity): Field effects; Magnetic fields; Electric contacts

ET Ba*Cu*O*Y; Ba sy 4; sy 4; Cu sy 4; O sy 4; Y sy 4; YBaCuO; Y cp; cp; Ba cp; Cu cp; O cp; Ag; Ba*Cu*O*Y; Ba sy 4; sy 4; Cu sy 4; O sy 4; Y sy 4; YBa2Cu3O; Y cp; cp; Ba cp; Cu cp; O cp; K; J; H